

COMPUTERWORLD

Compaq stalks host servers

BY MICHAEL FITZGERALD
and CAROL HILDEBRAND
ON STAFF

HOUSTON — After three years of slow going for the SystemPro in its struggle against minicomputers, Compaq Computer Corp. vowed last week to give its server family the features, software diagnostic tools and support it needs to truly do battle with systems as powerful as mainframes.

Early reactions leaned toward cautious enthusiasm. Analysts in particular warned that Compaq's large systems targets will not roll over and play dead. Local-area network managers appear more open to the concept.

However, Gary Stinac, Compaq senior vice president and general manager of its Systems Division, said Compaq sees roadblocks in its ability to sell network servers without certain mainframe-like functions. "We need to duplicate the functions

Performing beyond its class

Compaq claims its PC server advancements will for the first time enable the company to challenge main and midrange-level servers

INSIGHT SERVER MANAGEMENT

Software

- **Server manager facility** - Shared and software fault location events alerts and software resource management. Available soon
- **Server manager software** - Software tool that allows for easy reports on system's status. Just availability.
- **Memory system teaching** - Alerts users to possible memory problems before they happen. Third-quarter availability.
- **Critical error log** - Third-quarter availability.

Hardware

- **Advanced error-correcting code memory** - Allows full chip failure correction. Third-quarter availability.
- **Full server interlocking** - Allows fault tolerance through a fiber-optic connector. Third-quarter availability.

ity that's on a mainframe — fault tolerance, management controls, all these things," he said.

The first piece of the software, called Compaq Insight

Manager, is scheduled to be announced June 8, with more announcements expected later in the year. Insight Manager will include diagnostic tools, compo-

Continued on page 8

DECstation users fear abandonment

Unix flip-flop to push migration to Alpha

BY MARYFRAN JOHNSON
ON STAFF

A number of Digital Equipment Corp. customers reacted with anger or disappointment last week to the fog settling over the future of DEC's Unix-based workstation and server line.

DEC officials have acknowledged that its strategic "Unix for the 90s" operating system — the Open Software Foundation's OSF/1 — will not run on its current Unix-based DECstation/DECsystem line. Instead, OSF/1 is slated only for the next-generation Alpha reduced-instruction set computing systems, due out late this year and into 1993.

"I think this sends a very bad

signal that DECstations are a dead platform," said Ken Krallman, MIS director at Carleton Technologies, Inc. in Orchard Park, N.Y. "I'm sitting here now with nothing that makes sense to buy until I see Alpha. That says to me that they don't want my money."

Make way for Ultrix

The DECstation line is based on RISC processors from MIPS Computer Systems, Inc. and runs DEC's Ultrix, a Unix variant. With OSF/1 now crossed off the list for the DECstations, DEC has restarted its stalled development work on Ultrix.

"In our zeal to get OSF/1 in production, we debauched on Ultrix, and that was a bad idea," said David Stone, vice president of DEC's software products group. He added that DEC spends roughly \$75 million annually on OSF/1 work, while Ultrix gets about one-fourth that amount because it is "reasonably stable."

Tim Yeston, a manager at DEC's Unix system group, said last week that customers can count on three more releases of Ultrix as it becomes a "high-quality, stable, solid platform

Continued on page 12

RBOCs cast low-cost wide-area net

Nationwide deployment schedule laid out for frame-relay, SMDS services

BY JOANNE M. WEXLER
ON STAFF

WASHINGTON, D.C. — The seven regional Bell operating companies and two independent carriers outlined their short-term nationwide fast-packet deployment plans last week to enthusiastic reviews.

The fairly aggressive announcements of national frame-relay services and Switched Multimegabit Data Service will give users — many of whom are overwhelmed by the myriad of available fast-packet technologies for bandwidth-intensive applications — more ammunition to fire up their wide-area networking strategies.

In concurrent announcements in Atlanta and at the Inter '92 Spring show here, the carriers committed to offering frame-relay service in 21 major

cities by year's end, with 25 more cities to be added by next year. SMDS offerings are slated to emerge in 16 cities by the end of this year, expanding to another 28 during 1993.

"If you would have told me a year ago that we'd see the Bell

companies announce service and pricing for both technologies now, I would have thought you were crazy," said Steve Taylor, president of Distributed Networking Associates, a consultancy in Greensboro, N.C.

The local carriers had initially

focused on SMDS, then jumped on the frame-relay bandwagon when the technology piqued user interest last year.

The two technologies address similar applications. Frame relay is generally preferred where higher volumes of traffic travel among fewer users, while SMDS is more tuned to communications among a wide array of far-flung users, analysts said.

Continued on page 20

The \$40,000 bolt from out of the blue

BY ELISABETH HORWITT
ON STAFF

They say lightning doesn't strike twice, but don't tell that to Bill Lawson.

His firm, Kevin L. Erwin Consulting Ecologists, Inc., lost about \$40,000 worth of personal computer and network equipment when lightning struck nearly twice within two weeks

last July. The Fort Myers, Fla., firm had installed surge protectors to protect its power lines against

the frequent lightning storms in the area, but both strikes bypassed the power lines and went over the coaxial cable that connects the company's local-area network across two buildings.

The consulting firm lost all 11 network cards on its LANs both times. "If we had had 100 cards, we'd have lost 100," Lawson said. The first strike also totaled three workstations and one plotter and cost the firm two days' downtime, he added. "And those were not even direct lightning

hits — they just struck in the area."

Moreover, after it was hit, the company began experiencing "corrupted data files here and there occasionally," Lawson said. It took six months to resolve this problem.

In general, computer users are a lot more vulnerable to electrical disturbances than they might think. Best Power Technologies, Inc., a supplier of power protection products, claims that the average user site annually experiences 443 power "events" that are potentially dangerous to electronic equipment or data.

Continued on page 14

INSIDE

Executive Report

— It's "sync" or swim time for IS.

Flex/Nectar's Michael Zaccini makes staying on board with business goals look simple. Page 75.

It's a start. Users applauded the decision by 20 developers to back software licensing API. Page 4.

Do Post Information Systems' restructuring results in deep cuts, more downsizing expected to come. Page 14.

***** 5-DIGIT 48103
0010109379

0929

UNIVERSITY MICROFILMS INT
UNIVERSITY MICROFILMS INT
SERIAL PUBLICATIONS
ANN ARBOR MI 48103
300 N ZEEB RD



IN THIS ISSUE



NEWS

- 4 Major vendors agree on network software licensing standard.
- 4 Microsoft and Lotus are vying for corporate E-mail users.
- 6 Comshare begins a \$10.2 million overhaul of its network infrastructure.
- 8 PC users are taking advantage of lower prices and moving up to the 486 family.
- 8 Intel is expected to announce 486 upgrades.
- 10 Users discuss the pending Legend/Goal merger during Legend's annual user conference.
- 12 Sun's new generation of SPARCstations is more powerful than expected, users say.
- 12 DEC will extend its on-line transaction processing technology to other vendors' servers and databases.
- 14 The air transport industry plans a complete migration to OSI — provided it can persuade the airlines to overhaul their systems.
- 15 DEC plans wireless E-mail for Air-In-1 as it enters this emerging arena.
- 16 EDS wins 10-year outsourcing pact at Smith Food & Drug Centers.
- 20 IBM, 3Com unveil FDDI products starting at \$1,300.
- 24 CA details new products, including a mainframe-based E-mail system.

Quotable

"The [CIO] name is so stupid.... Nobody can be the chief information officer because there's too much information."

ALEX J. POLLOCK
FEDERAL HOME LOAN BANK
OF CHICAGO

See story page 105.

DESKTOP COMPUTING

- 35 Detroit Edison buys pen computers for its tree-trimming crews.

WORKGROUP COMPUTING

- 43 The Foreign Agricultural Service is installing Wang PCs and Banyan LANs at its 90 offices around the globe.

ENTERPRISE NETWORKING

- 51 Integrated network management vendors seek third-party solutions to broaden their platforms' appeal.

LARGE SYSTEMS

- 65 Data centers find recycling a really green move: It saves resources — and cash.

APPLICATION DEVELOPMENT

- 69 Users say they are already benefiting from an Xbase standards proposal submitted to ANSI.

MANAGER'S JOURNAL

- 85 An interview with Alex J. Pollock, president and CEO of the Federal Home Loan Bank of Chicago.

EXECUTIVE REPORT

- 75 IS groups that don't get on deck with company business plans may find themselves thrown overboard.

IN DEPTH

- 81 Advances in bar-code and data collection technologies give companies easier access to more product and customer information. By Kevin R. Sharp.

DEPARTMENTS

- 6, 16 News Shorts
- 28 Advanced Technology
- 32 Editorial
- 88 Calendar
- 91 Computer Careers
- 93 Fast Track
- 100 Marketplace
- 104 Stocks
- 105 Computer Industry
- 106 Inside Lines

EXECUTIVE BRIEFING

■ **Heads up, mainframes!** Compaq is gunning for data center-quality performance from its SystemPro line in a June 8 release of mainframe-type diagnostics tools and systems management software. Compaq vows to deliver the kind of features that are crucial to data center management in the first of several hardware and software server announcements coming this year. Page 1.

■ **Du Pont Information Systems** continues to rout redundancy in search of better value for the customer and a \$205 million annual savings for the company. In the process, it has hauled 150 DEC VAX centers into 75, is eyeing IBM centers for possible consolidation and plans to cut 275 more jobs by the fall; 225 jobs have already been axed. Page 14.

■ The shifting sands under DEC's Unix plans have some users worried and others watchful, particularly those shops heavily invested in the apparently doomed DECstation/DECsystem line of Ultra-based systems. Page 1.

■ The local telephone companies roll out their nationwide wide-area packet plans through 1993 at 10¢ per minute, and state users with inexpensive sample frame-relay pricing. Page 1.

■ Hewlett-Packard introduces its RISC-based Corporate Business Systems, aimed at displacing IBM mainframes in corporate data centers. Page 12.

■ Imagine packing an 1,000-character shipping manifest into a square symbol less than 2 in. on each side, or scanning aisle after aisle of inventory with a wave of the hand. With two-dimensional bar codes, small portable cameras and sophisticated conveyor belt monitors, businesses will soon be able to do just that. Page 81.

■ Despite high interest by CIOs and CEOs and the importance to companies and careers, many IS groups still do a poor job of aligning themselves with business goals. Page 75.

■ Sun Microsystems rolls out four models in its new SPARCstation 10 line, which includes built-in ISDN networking capabilities and a surprisingly strong performance showing. Page 12.

■ Lotus currently dominates the LAN-based E-mail market with CC-Mail, but Microsoft is

hot on its heels with Microsoft Mail 3.0 and a strategy that targets the millions of host E-mail users who may soon be migrating to LANs. Page 4.

■ Data centers are finding that not only is money green, but 'green' makes money. Managers report they can both save money and rake in the bucks by recycling materials such as laser cartridges and printer paper. Page 65.

■ A month down the road, the new pricing structure for Computer Associates' mainframe software is drawing mixed reviews from users, although more than half of those questioned give positive marks. Page 68.

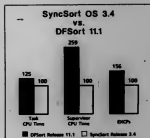
■ On site this week: Conrail, as part of its effort to re-engineer its business into a one-stop-shop transportation company, is immersed in an overhaul of its network and software infrastructures. Page 6. When the Foreign Agricultural Service decided to move to its own computer systems, it faced a tough challenge: how to run systems throughout the world without the help of on-site technical help. Page 43. A high-speed backbone switch is helping Harle-Hanks Data Technologies eliminate tape backup operations, interconnect multiple computing platforms and speed data delivery times. Page 59. Depository Trust, Wall Street's largest securities clearinghouse, is adding a backup data center to provide quicker recovery in the event of a disaster. Page 87. Pen computers could help Detroit Edison trim \$1.6 million from its labor costs in a year by making tree trimmers more efficient. Page 35.

The 5th Wave



WHOO

**THIS GIVES YOU A ROUGH IDEA
OF HOW FAST SYNCSORT IS.**



E-mail standard not in the bag

Microsoft, Lotus duke it out, introduce improved integration features

BY ROSEMARY HAMILTON
and CHRISTOPHER LINDQUIST
CW STAFF

Microsoft Corp. is gunning for the top slot in the local-area network mail market, but current leader Lotus Development Corp. is just as determined not to give it up.

Both are now making appeals to corporate users by playing up integration capabilities that will ship with their mail packages. The goal is to provide better links to current host-based electronic mail systems, a key issue with users contacted recently.

"Whichever one provides us with solid integration with [IBM's] OfficeVision VM and can

provide us with really terrific companywide scheduling, they would be in a really good position," said Rachel Stamenkovic, an information systems manager at Unum Corp., an insurance company in Portland, Maine.

As Microsoft readied its June debut of Mail 3.0 last week, it said it would target corporate customers by highlighting such functions as the product's ability to attach the front-end client portion of Version 3.0 to a variety of host systems, including IBM's widely used Professional Office System (Profs).

Not to be outdone, Lotus last week confirmed that it is working on technology to provide a direct link to and from its CC-Mail

calendar and scheduling functions and the IBM Profs scheduling component.

Right for the lead

These corporate appeals are part of an ongoing battle for the lead slot in the LAN E-mail market, which is critical to both companies. LAN E-mail is increasingly key to users' enterprise-wide mail strategies and is also a central component to emerging workgroup plans.

Lotus has been the market leader since it acquired CC-Mail last year. Last week, it introduced an upgrade for CC-Mail for DOS, and a Unix version is slated to ship this summer. It now claims to have 2 million E-mail users worldwide.

Microsoft, meanwhile, is moving in at a fast clip. According to its own numbers, it has about 1.4 million users. In January, the "Electronic Mail and Micro System Newsletter" estimated that Lotus had a total of 1.6 million mail users, while Microsoft had 750,000.

The latest focus on integration will likely strike a chord with many users who are struggling with either multiple mail systems or efforts to migrate more users from host platforms.

"For us to move from the Profs platform, we need calendaring [on a LAN], not just E-mail," said Robert Hecht, vice president of investment systems at Prudential Investment Corp. "The problem is, there's no [LAN] product now that has the

Mighty mail

Users can expect a slew of new features in both Microsoft's and Lotus' E-mail packages over the next year

Microsoft Mail 3.0

■ Client - Spell checking, message blockers, Object Linking and Embedding, name finder, transport independence, June.

■ Server - Increased directory space size (limited only by hardware). Fault-tolerant directory synchronization, June.

■ Gateways - Encapsulation allows rich data types to be transported across mail systems with no information loss, June.

■ Two workgroup applications based on technologies from the following areas: calendaring, scheduling, forms routing, group memory, work flow and document management. By year's end.

Lotus CC-Mail

■ Enhanced gateway to link CC-Mail and Notes. Features directory synchronization, better import and export facilities, June.

■ Tighter integration with Notes, allowing a user in Notes to select the Notes mail or CC-Mail. Scheduled for year's end.

■ CC-Mail for Sun Microsystems, Inc.'s OpenLook will ship within three months.

■ Next release of CC-Mail for Windows to ship before year's end.

■ Also slated for early 1993 is evolution of CC-Mail calendaring and scheduling functions to work with the calendaring function of IBM Profs.

CW Chart Tim Monahan

Leading the pack

On the LAN mail specification front, it appears that Microsoft, with its own initiative, is slightly ahead of a variety of vendor group that includes Lotus and supports the VIM effort. Microsoft said beta-test copies of a subset of the full Messaging Application Programming Interface (MAPI) specification and a development kit will be made available to developers and corporate users next month. An announcement on VIM specifications is expected soon.

If common APIs, such as MAPI or VIM, are adopted throughout the industry, application developers and mail-service providers could create products that would be easily connected by users to create customized mail solutions.

Microsoft announced MAPI earlier this year as a specification intended to give programmers a common interface for accessing mail-enabling features such as mail transport and address books. The Microsoft initiative also provides for back-end, or mail engine, specifications.

Vendors standardize on software license interface

BY JIM NASH
CW STAFF

REDWOOD CITY, Calif. — Users seeking relief from multiple, conflicting software licensing policies got a break last week when 20 key developers announced they would standardize on one approach to software licensing.

The decision by developers — including Microsoft Corp., Apple Computer, Inc., Novell, Inc., Digital Equipment Corp. and Lotus Development Corp. — to adopt the Software Publishers Association's (SPA) License Service application programming interface (API) will make it easier for users to ensure compliance with licensing agreements.

The specification standardizes one aspect of software licensing: the API used by applications to access licensing services.

This specification provides a consistent way for developers to

incorporate licensing parameters into their packages.

Currently, information systems managers must deal with a confusing tangle of licensing schemes. Their frustration is compounded by the fact that not all software packages will work with all licensing services.

Licensing services do not copy of software according to the number of licenses a company has purchased for each package.

Round of applause

However, the API will allow any conforming application to be managed by any server that also complies with the interface.

As a result, systems managers were quick to applaud the announcement, partially out of hope that automating the process of distributing authorized copies of software will reduce the number of accidental licensing infractions.

The strong industrywide support also got a cheer from Micro-

computer Managers Association, Inc., which released a white paper last fall with seven network software licensing recommendations of its own.

Joanne Witt, president of the Warren, N.J.-based association and a white paper co-author, endorsed the API with one caveat. She said that while the interface is a good first step toward untangling license chaos, vendors must still address the question of how to account for licenses that employees on stand-alone, portable and home computers use.

Of the two dozen vendors that have also endorsed the API, Novell, DEC, Microsoft and Grident Technologies, Inc. were on hand to say that they will incorporate it into future versions of their software.

No specific dates were announced, but the consensus was that the API could be used for commercial applications by year's end.

Separately, the Open User Recommended Systems (OURS)

group — formed last year largely by Novell customers and other software vendors — has also examined the issue of software licensing.

OURS member Donald Sternfeld, director of IS at Philadelphia law firm Morgan, Lewis & Bockius, said it is "wonderful" to hear that so many vendors are supporting a standard interface.

"We've got to make sure whoever makes software gets their legitimate compensation," Sternfeld said. "But we've got to make sure it doesn't get onerous for the user, either."

The API would seem to somewhat ease the task of managing software distribution, he said.

Licensing for help

"If this can take the pain out of [managing software licenses] and make my job easier, I'll love it," said Fred Wingard, director of distributed computing planning at Merrill Lynch & Co. in New York.

His sentiments were echoed

by others frustrated by the lack of coordination among software vendors on this issue.

"This is excellent. It's good to hear that the vendors are moving on something end users have been talking about at trade shows and user-group meetings for the past 30 months," said Joel Diamond, technical director at the Windows User Group Network in Media, Pa.

Ken Wasch, executive director of Washington, D.C.-based SPA, said the next step in sorting out licensing policies is up to consumers.

Wasch predicted that users will increasingly use coherent licensing policies as a criterion for buying software. New policies will follow successful ones in fairly quick order, he said.

He pointed to Microsoft's decision last year to allow a single license to be used when someone who works with an application copies it for home use, as long as usage can be broken down to 80% in the office and 20% at home.

Other vendors are quickly following suit, Wasch said.

Attention All dBASE Users: Your Windows Have Arrived.

dBFast

Introducing new dBFast™. The first and only dBASE™ compatible database and

dBASE/X-Base language for Windows. It's the fastest, smartest and easiest way for millions of users and developers to join the Windows revolution.

Graphical, colorful dBFast will bring new life to all of your

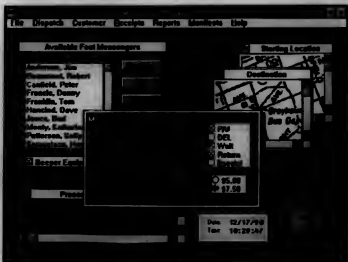


Your applications will really come to life with multiple colors and fonts.

existing dBASE programs.

Liven them up with multiple, movable windows, pull-down menus, check boxes, dialog boxes, radio buttons, push buttons and bitmap pictures.

dBFast also helps



dBFast helps you create powerful, graphical database applications quickly and easily with pull-down menus, check boxes, radio buttons and even bitmap images.

you create new dBASE programs quickly and easily.

Unlike other Windows development systems that force you to learn a new language, dBFast allows Windows and Clipper developers to use the language they already know with more than 200 extensions and an interactive editor, compiler and linker.

And full industry standard DDE and DLL protocols allow

your programs to communicate with other Windows applications.

So call 1-800-CALL CAI and we'll rush you a free Demo Disk.

Call right now.

After all, haven't you waited long enough?

COMPUTER ASSOCIATES
Software superior by design.

dBFast™

© Computer Associates International, Inc., 1 Computer Associates Plaza, Ithaca NY 14850-7000. All trade names referenced herein are trademarks of their respective companies. dBASE is a registered trademark of Ashton-Tate Corporation.

NEWS SHORTS

NetView 2.3 due in December

IBM last week announced a December delivery date for NetView Version 2.3. Network managers have been waiting since the product's introduction last fall for the system's real-time management capabilities and multivendor graphical user interface. Among the NetView 2.3 enhancements that were not included in last fall's announcement are the ability to manage Ethernet 802.3 and frame-relay devices, the ability to support a virtually unlimited number of consoles, a customizable command interface for 3270-based NetView workstations and faster searching through automation tables that tell an application the right response to a given network situation.

Dial boosts Andersen contract

Phoenix-based Dial Corp.'s Consumer Products Group last week tapped its mainframe outsourcing provider, Andersen Consulting, to take over applications management and upgrades for Dial's VAX 4000-based distributed systems. Andersen has been providing Dial with host processing from Andersen's Dallas processing center since 1990 under a five-year, \$10 million contract.

Ingres reveals OpenView link

Ingres Corp. told 800 users gathered in Tarpon Springs, Fla., that its Ingres relational database technology would be embedded in Hewlett-Packard Co.'s OpenView 3.0 network management system. The move came nearly two years after HP took an equity position in The Ask Cos., allowing Ask to acquire Ingres in October 1990.

Vaccine foils stealth virus

The Devidoon Group, a publisher of securities industry software, last week announced the release of Vaccine 5.0, an antiviral software package that detects and guards against the slippery "stealth bomber" virus. The stealth virus is a particularly troublesome strain that conceals itself through such techniques as self-encryption, redirection of disk reads and alteration of disk directory data. Vaccine 5.0 sells for \$129.

IBM network adopts X.25

The IBM Information Network last week announced that it will expand its support of X.25 and IBM Advanced Peer-to-Peer Networking (APPN) links on its value-added network. Formerly, an X.25-compliant user device could use IBM's network to communicate with Systems Network Architecture devices but not with other X.25 devices. IBM is now supporting X.25-to-X.25 communications, both here and abroad, and is extending its overseas X.25 and APPN services to link users in different countries.

Short takes

Microsoft Corp. said it has exceeded expectations by shipping 3 million copies of Windows 3.1 during the first six weeks of its release. The company also announced plans to work with banking software vendors and systems integrators to produce a common set of application programming interfaces for the banking industry. . . . Cadre Technologies, Inc. added object-oriented design features to the upgraded version of Teamwork 4.1, the Beaverbrook, Ore.-based firm's tool set for building User Applications. . . . Data General Corp. released CEO 4.0, an upgrade of the office automation package for its MV minicomputer users. . . . Austin Computer Systems said it will begin including virus protection software from McAfee Associates with its desktop and notebook computer systems. . . . AST Research, Inc. docked in with price cuts of up to 17% on its FastBoard upgrade boards. Pricing new runs from \$995 for an Intel Corp. 80386DX 33-MHz model to \$1,695 for the new 1486DX2/50. . . . ComputerLand Corp. introduced its own line of Trion PCs, based on Chips and Technologies, Inc. processors. . . . Leading Edge Products, Inc. zapped its PC prices downward by as much as 20%.

More news shorts on page 16

Conrail revamps architectures

Multimillion dollar network key to outsourcing role for transport firm

BY JOANIE M. WEXLER
CONTRIBUTOR

PHILADELPHIA — Consolidated Rail Corp. has launched a \$10.2 million, soup-to-nuts network infrastructure revamp as part of an effort to transform itself into a one-stop-shop transportation company.

Conrail's redesigned network and data architectures will help it shoulder the responsibility of becoming a single point of contact for customers whose shipments may traverse other railroads and transportation systems in addition to Conrail lines.

To be successful, this effort requires an airtight grasp on shipment whereabouts, said Bill Everett, manager of telecommunications planning. A new Fiber Distributed Data Interface-ready internal network infrastructure and revamped data center will position the firm to handle the corresponding anticipated explosion in data traffic, Conrail officials said.

Now dig

For the most part, the luxury of overhauling the network is enabled by the firm's consolidation of three Philadelphia office sites into a new 29-story location, said Al Castan, Conrail's acting manager of network resources. Conrail plans to move 3,000 employees into that building in July, and a redundant data center in Byberry, Pa., will be ready for occupancy early next year, he added. Conrail plans to re-engineer its applications and data architectures immediately after the

sending it directly to the mainframe. The AEI has been sanctioned by the American Association of Railroads as a standard reporting method that allows the railroad industry to exchange data and ally against its key competition: the truckers.

Castan said he expects the Conrail network to have to han-

Managing network to a partially installed network of 80 Novell, Inc. NetWare LANs that are based largely on Cablettron Systems, Inc. smart wiring hubs and Wellfleet Communications, Inc. multiprotocol bridge/routers.

Previously, Conrail had used another vendor's dumb wiring



Conrail's Everett is anticipating an explosion in data traffic once the new network and real-time scanning systems are operational.

dle a message load increase from nearly 40 messages per second to 2,000 messages per second during the next 18 months, in large part because of AEI-generated traffic.

With efforts such as AEI, other large railroads are mirroring Conrail's efforts to become transportation logistics out-sourcers — an appropriate role for them because of their considerable systems investments, according to William J. Rensnick, vice president of the rail practice at Mercer Consulting in Lexington, Mass.

hubs for Ethernets and IBM's manageable Token Ring wiring hubs. However, the railroad sought wiring hubs that could both support and manage the company's mix of Ethernet and Token Ring LANs collectively, and "IBM wasn't ready to play," Everett said. To date, IBM has not announced a manageable, multimedia wiring hub.

Cabletron coup

Meanwhile, Conrail has taken advantage of Cabletron's recent rate reductions for the high-level Spectrum network management system, which Conrail began installing last week to manage 12 network elements, said Gary Morris, an external project manager from Inet, a Miami-based consultancy that is involved in the project.

Conrail is still investigating wide-area inter-LAN technologies such as frame relay and Switched Multimegabit Data Service. Like many companies considering neophyte fast-packet-switching technologies, "we're still trying to sort out the players and offerings," Everett said.

Overall, Morris said, Conrail will remain centrally run. Novell file servers will be clustered in one centralized location and fall under the information systems department's domain. Conrail does not plan to shift from its mainframes to smaller Unix platforms, he said.

KEY TO THE railroad's new role is the capture of real-time, accurate information from the field.

move, Castan said. He would specify only that the effort would rely heavily on computer-aided software engineering tools and parallel-processing equipment. In addition, five 3090-class IBM mainframes will be replaced by two IBM Enterprise System/9000-class hosts.

Key to Conrail's new role is the capture of real-time, accurate information from the field, Everett said. To that end, the railroad is installing the Automatic Equipment Identification (AEI) system, a scanning system for capturing cargo location information from all vehicles and

"Trucking companies are more numerous but smaller," so few have the budgets to take on this role, he explained.

Everett said Conrail will soon beta-test a revamped electronic data interchange application. The more user-friendly, personal computer-based package is expected to encourage customers to invoke larger volumes of transactions and accelerate business.

To help prepare for the burgeoning data traffic, Conrail is revamping reaches down into its local-area networks. It is migrating from Microsoft Corp.'s LAN

WILL THERE
BE A
SCOTT BRIDGES,
JOHN WILLEY,
JOHN YOUNG
AND LARRY ELLSON
ABOUT TO
COOPERATE ON?

Price cuts move users up from SX base

BY CAROL HILDEBRAND
OF STAFF

With Intel Corp.'s 1486 chip moving toward the mainstream both in price and corporate acceptance, personal computer vendors are nudging up their entry-level configurations. Many users have already left the 386SX behind for the 386DX, and some are leaping the 486SX in favor of the 486DX standard.

With PC prices locked in a death spiral — IBM has reduced PC prices four times since January — and compute-intensive operating systems such as Windows and OS/2 garnering major attention, the situation appears ripe for users to bring their hardware standards up to graphical user interface levels for a negligible price difference.

Enrique Crespo Jr., corporate manager of user computing services at Torrington Co. in Torrington, Conn., said his company has moved up to the 386DX platform. "Once upon a time, it was an SX. But now PCs are cheap and getting cheaper, and you are not going to be able to grow memory or applications with anything but a true DX," he said.

Gerry Jobin, an analyst at Loyola University in Chicago, said he has just finished defining what he called the "vanilla workstation," an entry-level machine that will fit 60% to 80% of his users' needs. "It's a 386DX machine with an 80M-byte hard drive and 4M bytes of RAM," he said.

While offering 386SX-based boxes, vendors are slashing prices on their fuller featured DX machines, making them a more viable option. For example, the Compaq Computer Corp. entry-level line, due out on June 15 [C.W. May 18], will sport startlingly low price tags, with an SX street price reportedly hovering around the \$700 mark.

Of the 18 users interviewed by *Computerworld*, most said a 386DX was now a minimum entry-level configuration. Recent price cuts on Intel's 486SX line of up to 58% are expected to further intensify the migration upward, observers said [C.W. May 18].

That is fine with Intel. An executive last week told *The Hong Kong* magazine that Intel is cutting the price of its 486SX chip in half in order to position it as the

entry-level CPU for the mainstream PC market. "There is really no reason" for an OEM to build a 386-based PC anymore, said Albert V. C. Yu, general manager of Intel's Microprocessor Products Group.

Chuck Davis, director of information resources at Eagle Industries, Inc. in Chicago, said he is thinking of bumping up his user recommendation to a 386DX. "The delta between an SX and a DX may narrow enough to justify a jump to the next level," he said, adding that a gap of \$200 to \$300 would be low enough to make him upgrade.

One rung on the migration ladder that users seem to be skipping is the 486SX. Many cite the chip's lack of a math coprocessor, saying all it basically offers is added cache memory.

Charlene Arvey, network manager for the engineering department at Indianapolis Water Co., said that the company's entry-level machine is a 25-MHz 386DX, but she has been trying to persuade people to bump up to the 486DX platform and bypass the 486SX offering.

"I think it was really a mistake to bring out the SX," she said. "With the 486, you want

speed, so why cripple it by removing the coprocessor?"

Charles Darnell, chief information officer at Fryers, Gl-based Lithonia Lighting, agreed. "I think we'd skip over that [platform] because it doesn't give us the right price/performance ratio," Darnell is currently standardized on 386SX 20-MHz machines but recently bought more than 1,000 upgrade boards from AOK, Inc. to bump up desktop performance levels.

However, the 386SX has not hit the skids. Richard Zwetschkow, an analyst at International Data Corp. in Framingham, Mass., pointed to new cache version chips from Cyrix Corp. and IBM as well as a second-life popularity in the notebook realm as signs that the processor is not yet moribund.

Many users still standardized on the 386SX platform cited price as the main incentive. Michael Mourey, manager of technical support at Indiana Purdue University in Fort Wayne, said that with users paying for PCs out of their departmental budgets, he recommends a 386SX configuration as a minimum.

Computerworld Hong Kong contributed to this story.

Intel to go retail route

BY MICHAEL FITZGERALD
OF STAFF

FOLSOM, Calif. — Tomorrow Intel Corp. will push into a new frontier for microprocessing: retail sales.

Intel is expected to announce its OverDrive Processor family — a line of clock-doubling 1486 chip upgrade products to be sold directly to consumers through retail stores and computer dealers.

Intel's first two OverDrive processors will be a \$549 version for use in systems equipped with 16-MHz or 20-MHz 486SX processors and a \$699 version for a 25-MHz 486SX system. Intel will support the chips through a toll-free number.

The chips jump into a Performance Enhancement Society that Intel has encouraged vendors to use for some time. Most systems vendors, including IBM and Compaq Computer Corp., already support the architecture.

Intel will offer DX and DX2 OverDrive chips later this year as well as build PS versions.

Compaq stalks hosts with SystemPro revamp

CONTINUED FROM PAGE 1

ment failure alerts and system logs that were previously unavailable for personal computer users (see chart).

The tools will be bundled with the SystemPro at no extra cost. Compaq will also sell it for \$695 to users of non-Compaq servers.

Users said they would like to see the new offerings before signing on.

"We have some interest in that, but technically, I have some reservations about their ability to do it," said Rick Meacham, end-user computing manager at Nationwide Services, Inc. in Nashville.

"Here's a company with no software capabilities in the industry moving heavily toward software," agreed Jack Karp, vice president at Meta Group, Inc. in Westport, Conn.

Ronnie Ward, Compaq's director of product development for the Systems Division, said the company has the tools it needs. "We have over 100 systems engineers that... do that kind of work," he said. "We have the resources."

Compaq and some users noted its Network Manager board, now renamed the Server Manager/R, came out last July and has worked as claimed.

Several users say they think Compaq has finally learned how to handle SystemPro. "Three

Full agenda

Compaq is gearing up to unleash a broad array of SystemPro products and enhancements:

• 100 MIPS capabilities and support for IBM's coming 568 chip. Delivery: end of 1992.

• SystemPro with up to four processors that run at 200 MIPS and support 500 bytes of disk space. Delivery: 1993.

• Expansion of the low-end LT line. Delivery: 1992.

• Overhaul of all system components in an effort to improve server availability. Delivery: now through 1993.

years ago, I thought they had unrealistic expectations of what was going to be required to compete in the minicomputer world," said Glenn Sandusky, chief information officer at benefits consultancy and major SystemPro user Miller Mason & Dickenson in Chicago. "This shows that they're moving in the

right direction."

Also scheduled for June 8 is a deal to bundle Novell, Inc.'s NetWare 3.11 with SystemPro, sources close to Compaq said.

Later announcements will focus on NetWare diagnostics that will tie in with Novell's coming NetWare Management System and the third-quarter debut of its System Fault-Tolerance Level III (SFT III) NetWare.

"SFT Level III, a higher number of processors, [advanced error-correcting code] and more advanced diagnostic utilities

would allow us to effectively replace our mainframe computers, if... the I/O bottleneck is improved," said Louie Kahn, network administrator at the Centers for Disease Control's division of immunization in Atlanta.

Skinn said Compaq will continue to use the current version of the Extended Industry Standard Architecture I/O bus but will develop specialized data transfer buses to attempt to relieve data transfer pressure.

Users who have already replaced mainframes with LANs liked the sound of the Compaq strategy. "That could be great," said Bill Lodge, project leader at Turner Corp., a construction company that moved its mainframe applications over to large non-Compaq-based LANs.

Japan's sneak peek

Compaq's Japanese subsidiary last week announced three of the five notebooks that Compaq will introduce in the U.S. on June 15, including its first color notebook.

The three products include the following features:

• **LTE Lite/25C.** A 6½-pound notebook with an 8.4-in. active-matrix color display. It is based on Intel Corp.'s 25-MHz 80386SX processor, which has 64K-byte cache, 4M bytes of random-access memory (expandable to 20M bytes) and either an 84M- or 120M-byte hard drive. Nickel-metal hydride batteries last up to four hours.

The **LTE Lite/25C** also features EasyPoint, a trackball attached to the display with mouse-like buttons on the back of the display.

• **Centura 3/20 and 3/25.** These 6.2-pound notebooks use Intel's 20-MHz and 25-MHz 80386SX chips. The 3/20 has 2M bytes of RAM standard (expandable to 10M bytes) and will have 40M- and 85M-byte hard drives. The Centura 3/25 has 4M bytes of RAM (expandable to 12M bytes) and comes with either a 60M- or 120M-byte hard drive. Nickel cadmium batteries last up to 3½ hours.

Compaq is also expected to announce two low-end 386SX-based notebooks and two new desktop lines [C.W. May 18]. The company confirmed that the Japanese products are comparable to the coming U.S. products, adding that U.S. pricing was not available. A spokesman said the Centura line will target the mass-market channel.

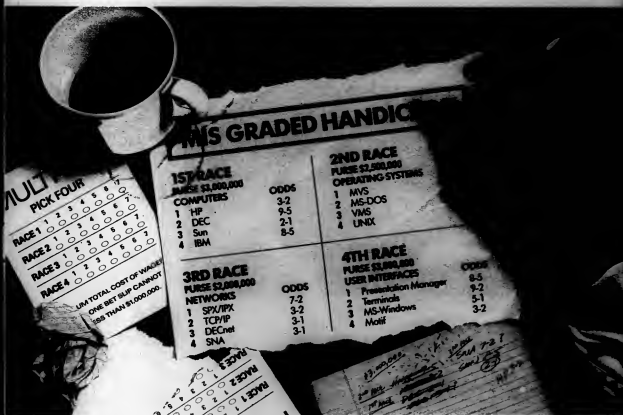
Compaq's SystemPro family will get a major facelift this year, said Gary Skinn, Compaq's senior vice president.

The SystemPro line will expand on the high end to include a 100 million instructions per second system with up to four chips. They will use both Intel 1486 chips and the coming PS, or 586.

On the low end, sub-\$5,000 SystemPro/LTs will come. Compaq will add a specialized RAM that will protect data errors on the chip level, mirrored the servers' error-free drive array capable of redundant arrays of inexpensive disks (L7 support).

MICHAEL FITZGERALD

IS THIS YOUR IDEA OF HOW TO MAKE A CRITICAL BUSINESS DECISION?



You'd never gamble with your company's future. And yet, if there's anything more risky than picking hardware or software products, it's picking a combination of them.

Oracle can put the odds in your favor. Our open family of portable software not only works with other vendors' products, it runs across virtually all computers, operating systems, networks and user interfaces. Making any present or future combination a winning one.

The Oracle family includes system development tools, distributed databases, office information systems and business applications.

Our family is backed by the world's third-largest independent software vendor with worldwide education, consulting and support services. As well as an extensive network of vendor alliances.

So give us a call at 1-800-633-1071 Ext. 8170. Then sit back and enjoy the technological race.

Because with Oracle, no matter who wins, you win.

ORACLE

Software that runs on all your computers.

©1988 Oracle Corporation. ORACLE is a registered trademark of Oracle Corporation. Other trade names referenced are the trademarks of their respective manufacturers. This document is for illustrative purposes only and is not intended as an opinion or prediction. Call for hardware and software requirements. Oracle in U.S.A. has other trade names, call 1-800-633-1071 for product, service and company information.

Legent sets integration plans, outlines its Unix products

BY GARY H. ANTHERS
CW STAFF

ORLANDO, Fla. — Enthusiasm was tempered by questions last week as Legent Corp. customers analyzed the company's planned merger with Goal Systems International, Inc.

Legent executives outlined consolidation and migration plans in interviews with *Computerworld* during the company's annual user conference. Some users

said they were concerned about how the data center software company would combine its product lines with Goal's, particularly in areas of overlap.

"The merger is very exciting to us," said John M. Jakymiw, a systems availability management technician at Kemper National Insurance Co. in Long Grove, Ill. He said Kemper, which has a number of products from both vendors, wants to more tightly integrate its systems. The merger "is a step in the direction of sup-

porting our integration strategy," Jakymiw said.

Legent President John F. Burton acknowledged some users' concerns about what the merged companies will do with redundant products. Legent and Goal sent letters to users last month saying two pairs of product families — for automation of data center operations and output management — will be merged with full upward compatibility from their preceding product lines.

Burton said Legent will provide automated tools to help users move to the new combined products, which will be available in one to two years. He said Legent



Burton promises full compatibility

will have a migration blueprint available for users by the end of July.

Vienna, Va.-based Legent, with sales last year of \$203 million, has products in information systems business management, data center operations management, systems resource management, network management and software management. Goal, which had sales of \$128 million last year, focuses on software to support operations management, performance management and computer-based training.

One user who asked not to be named said his company was considering buying additional tools from both companies but would want to see how things play out.

Burton said Legent is also well under way in an unannounced project to port its products to Unix. He said he expects to move Legent's Endeavor software management product to Unix in less than a year. Initial target environments under consideration are reduced instruction set computing-based boxes from Hewlett-Packard Co., Sun Microsystems, Inc. and IBM, Burton said.

"We want Legent to be a [Unix] player," said G. B. Wine, a senior systems analyst for MVS systems at Shell Oil Co. Wine said Shell is a "heavy user of Legent tools" in its "blue," or commercial, operations.

AMR exec crosses over to Frito-Lay

BY ELISABETH HORWITZ
CW STAFF

PLANO, Texas — Frito-Lay, Inc. has appointed James E. Juracek, vice president of systems engineering at AMR Corp., as its new head of MIS, the firm announced last week.

The move to Frito-Lay is "a tremendous opportunity because Frito is absolutely the dominant player in the snack food industry and on the technological leading edge," Juracek said. "It's like becoming the new manager for the [New York] Yankees."

While conceding that he would "have some learning to do" in a completely different industry, Juracek expressed confidence that his "management and technical skills will be applicable in a retail environment."

During his five-year stint at AMR, Juracek headed the development of the Sabre reservation system and continued to have full responsibility for the system and its underlying network.

Indeed, Juracek leaves a lot of irons in the fire at Sabre. The company is currently in the midst of making preparations to an X.25 network and a multiwindow client/server system, he said.

Juracek officially begins at Frito-Lay in mid-June, reporting to Chief Financial Officer Michael White. He will replace Charles Feld, who resigned as Frito-Lay's vice president of MIS earlier this year.

AMR has yet to determine his successor, the company said. William Coyne, managing director of computer systems, is acting as Juracek's replacement in the interim.

IN TAKING OUR SOFTWARE TO THE NEXT STEP, WE FOUND OURSELVES GOING CONSIDERABLY FURTHER.

THE WORLDWIDE SOFTWARE SOLUTION FOR THE AS/400.

AS THE PREMIER PROVIDER OF AS/400 BUSINESS SOFTWARE TO MULTI-SITE, MULTI-NATIONAL COMPANIES ALL OVER NORTH AMERICA, WE LEARNED THE CHALLENGES THESE FIRMS FACE IN OPERATING ACROSS NATIONAL BOUNDARIES IN BUILDING THEIR SOLUTIONS. WE CREATED THE SYSTEMS AND STRATEGIES TO HELP YOU GO BEYOND YOUR GEOGRAPHIC AND BUSINESS BORDERS AS WELL. WE OFFER INTERNATIONALLY-ENABLED FINANCIAL, HUMAN RESOURCES, DISTRIBUTION, ENVIRONMENTAL, AND PROCESS MANAGEMENT

SOLUTIONS, FEATURING FULL NATIONAL LANGUAGE SUPPORT, MULTI-CURRENCY AND COMPREHENSIVE VAT PROCESSING AND TO ENSURE YOUR SUCCESS.



FULL IMPLEMENTATION. WE'VE FORMED THE SOFTWARE 2000 GLOBAL SUPPORT SYSTEM, THUS CREATING A SEAMLESS SERVICES NETWORK WORLDWIDE. SO WHETHER YOU DO BUSINESS AROUND THE CORNER OR AROUND THE WORLD, CALL SOFTWARE 2000 AT (508) 778-2000 BECAUSE TOGETHER, THERE IS NO LIMIT TO HOW FAR WE CAN GO.

Software 2000

THE AS/400 BUSINESS SOLUTION

IBM and AS/400 are registered trademarks of IBM Corp.

You Won't Believe It!

An MVS Development Environment on a PC



Edit



Animate Programs



Execute JCL



Run Utilities



Primary Menu Option



Customize Panels



Test IMS



Test CICS



Test Assembler

Micro Focus AD/MVS™

Micro Focus AD/MVS, a new product from Micro Focus, now offers programmers the look and feel of TSO/ISPF and the high availability and consistent response times of OS/2® and DOS.

Micro Focus AD/MVS provides a PC-based MVS development environment with COBOL Workbench features including industry-standard Micro Focus COBOL, Advanced ANIMATOR™, the visual source-code debugger and more...

Micro Focus AD/MVS allows programmers to modify panels and develop new ISPF/PDF applications with the PDF/DM emulator. IMS, CICS, Assembler and DB2™ add-on products can be seamlessly integrated.



MVS JCL, PROCS and utilities can be executed under OS/2 and DOS with Micro Focus AD/MVS. And files are managed using MVS dataset names and types rather than OS/2 and DOS conventions. Physical sequential, partitioned, VSAM KSDS, generation data groups are all supported.

Quick and easy to install, mainframe programmers can be productively developing on the PC platform in minutes. Micro Focus AD/MVS is so much like TSO/ISPF, it's intuitive.

Call 800-872-6265 and "Discover a Better Way of Programming™" with Micro Focus AD/MVS today.

MICRO FOCUS®

© Micro Focus Inc., 2465 East Bayshore Road, Palo Alto, CA 94303 Tel. (415) 856-4161.

IBM and OS/2 are registered trademarks of International Business Machines Corporation. AD/CYCLE and DB2 are trademarks of IBM. Micro Focus is a registered trademark and COBOL Workbench, ANIMATOR, Micro Focus AD/MVS and A Better Way Of Programming are trademarks of Micro Focus. Micro Focus DBA Contract Number: G000930A025251-P002

HP pits RISC against IBM

BY THOMAS HUFFMAN
OF STAFF

NEW YORK — Hewlett-Packard Co. took its reduced instruction set computing (RISC) strategy into the data center last week, unveiling a line of high-end systems that are positioned against IBM mainframes.

HP executives claimed the HP 3000 and HP 9000 air-cooled machines cut operating, maintenance and support costs by 80% compared with traditional mainframe computing.

The machines are also said to offer 60% to 70% better performance than HP's current high-end machines.

Fleeced all around

HP users liked what they saw. "We've ordered two" HP 9000 servers, said John Cooper, senior vice president of information systems and operations at Liberty Bancorp, Oklahoma's largest bank holding company, based in Oklahoma City. He said Liberty will upgrade to two HP 9000 Series 877 systems later this year.

"I'm impressed with the processing power," said Bill Nadaski, HP program manager at FMC Corp., a Chicago-based manufacturer. Nadaski said the company's decision to purchase an HP 9000 Model 990/20 enabled the firm to eliminate smaller HP boxes in the field.

HP's scalable approach to system upgrades pleased Roger Lindquist, manager of information services at Dreyer's Grand Ice Cream, Inc. in Oakland, Calif. "You can upgrade to a more powerful machine without changes to your software," said Lindquist, whose shop recently upgraded to an HP 3000 Model 960 from a Model 955.

The HP 3000 systems run HP's Posix-compliant proprietary MPE/IX operating system, and the HP 9000 servers run the HP/UX version of Unix.

Ready, aim, fire

Digital Equipment Corp. customers are a secondary target for HP as DEC struggles to get its own RISC-based Alpha machines on the street. DEC's Alpha-based machines are not expected to begin shipping until next year. Meanwhile, HP is expected to integrate its new Alpha-type RISC chip in its high-end machines by year's end.

Analysts were upbeat about HP's chances.

"They are finally able to get machines at the high end to compete against mainframes at a much lower cost," said Kate Nussendorn, a senior analyst at Meta Group, Inc., a market research firm in Westport, Conn.

Sun's built-in ISDN box SPARC's interest

BY MARYFRAN JOHNSON
OF STAFF

MOUNTAIN VIEW, Calif. — Sun Microsystems, Inc. last week unveiled its long-awaited next generation of SPARCstation systems consisting of four new machines built around the SuperSPARC Vthing chip from Texas Instruments, Inc.

Sun surprised critics by introducing more powerful systems than were anticipated, including what is said to be the first workstation with built-in integrated Systems Digital Network (ISDN) capabilities. The new product rollout includes a pair of two- and four-processor desktop workstations slated to ship late this year and early next year.

"I'm impressed that Sun is getting really close to what database users need," with improved disk performance, said Barbara Kostinich, MIS director at Consumer Health Services, Inc. in Boulder, Colo. The SPARCstation 10s are two to four times more powerful than current SPARCstation 2s. They also quadruple the speed at which data can be processed through memory and more than

double the rate of data retrieval from disk storage devices. "We're also excited about the ISDN capability because we run a large telecommunications facility here," Kostinich added.

The SPARCstation 10 comes in four workstation models, priced from \$18,495 to \$57,995, and four server configurations, priced from \$16,995 to \$55,295. These midrange Unix workstations are aimed at power users in both commercial and technical markets, Sun President Scott McNulty said. "We're going to be all over the place. Deal with it, competitors."

Rivals such as Hewlett-Packard Co. are already dealing with it, some users said. "I see the Sun announcement as too little, too late. Although for Sun worshippers I'm sure it sounds great," said Robert Grandie, a systems manager at NASA Langley Research Center in Hampton, Va.

Grandie said Sun's emphasis on investment protection, hardware upgradability and applications performance "sounds like

Head-to-head

Sun pits its midrange Unix workstation against comparable systems from its chief competitors

	Sun SPARCstation Model 30	HP 9000 710	IBM R3/6000
Configuration base includes 16-bb. color, 32MB bytes of memory and approximately 400MB bytes of disk space			
Clock rate	36 MHz	50 MHz	33 MHz
CPU upgradable card	Yes	No	Yes
MIPS, MFLOPS	86.1, 10.6	57.9, 12.2	NA, 14.8
Internal disk	424-448MB bytes	0-640MB bytes	160M-2G bytes
I/O bus architecture expansion slots	4	None	4
Price	\$19,495	\$15,065	\$36,675

Source: Sun Microsystems, Inc. and IBM

CTW Credit: David Gossamer

the same tired story DEC is playing out. It's the story you give when you aren't the fastest on the block."

While Sun's CPU clock speeds of 36 MHz to 45 MHz on the SPARCstation 10 models are lagging behind competitors IBM and HP, other performance ratings for system throughput indi-

cate a leading position for Sun, analysts noted (see chart). "I think the key point for all users is to benchmark your own code on IBM, HP and Sun," said Darren Curtis, a system manager at Battelle, Pacific Northwest Laboratory in Richland, Wash. "Sun is still the No. 1 user machine as far as I'm concerned."

DECstation users fear abandonment

CONTINUED FROM PAGE 1

that coexists well" with OSF/1.

"We will enable customers to build a computing environment [that will let] them migrate on their terms from Mips to Alpha," Weston said.

Several users said that although they are disappointed to see the DECstation line heading for a dead end, the portability of applications developed in C or C++ can ease their transition to other vendors' Unix platforms. "I'm not sure I care, at this moment, about another version of Ultrix or if the DECstation becomes obsolete," said John Steward, MIS director at the Public Securities Association in New York. The financial trade association is wrapping up a conversion from Wang Laboratories, Inc. machines to a DECsystem running Ultrix.

"I know there are other Unix platforms where I can run my software, such as IBM, Sun, Hewlett-Packard and, of all places, Prime," Steward added.

Yet for users such as Hammer Hoe, information systems manager at Tennessee Minerals Co., DEC's change of heart is alarming. Hoe was counting on migrating his Ultrix applications to OSF/1 but staying on the Mips-based platform.

"Right now, the Mips chip

gives me all the horsepower I need. I'm not screaming for better, faster hardware but for more timely and robust applications," Hoe said.

Another factor playing against the DECstation line is a political one: the pending acquisition of Mips by workstation competitor Silicon Graphics, Inc. The Mips line is obviously a lame duck," said Jeffrey Canin, an

analyst at Montgomery Securities in San Francisco.

"The fact that OSF/1 won't be there on the Mips platform is a bit of a disappointment, but it's something we were prepared for," said Shalom Bryski, senior vice president at Bankers Trust Co. in New York, a major DEC VAX/VMS shop that took a cautious approach to Unix.

"We bought about 30 DECstation 3100s and 5000s, and we banned any of the larger Unix processors," Bryski explained. The bank limited Ultrix development to isolated pieces of code and steered clear of putting any production or mission-critical

applications on the DECstations.

At Allied General Agency, Inc., an insurance business in Scottsdale, Ariz., with three large DECsystems installed, the hardware is less of a concern than software, systems manager Bill Brown said. Upgrading to the Mips R4000 processor or to an Alpha system, he said, sounds like "a big waste of money."

"I want faster disk, better terminal servers, networking and database access," Brown said. "I like DEC and don't want to change, but if there is some benefit in moving to another Unix platform, our software is portable enough to do it."

DEC heats up distributed OLTP market

BY MELINDA CAROL BALLOW
OF STAFF

Digital Equipment Corp. will announce plans to extend its on-line transaction processing technology to a variety of non-DEC servers later this summer, sources close to the company said.

DEC is expected to announce versions of its Application Control Monitor System (ACMS) transaction processing technology that support Microsoft Corp.'s Windows New Technology and OSF/1 servers based on DEC Alpha chips. It is also expected to form a J16.2 connections to IBM's CICS.

Sources said ACMS willulti-

mately run on other versions of Unix in addition to OSF/1.

Separately, DEC is developing a version of the DEC Distributed Transaction Manager that will support the X/Open Consortium Ltd.'s XA interface, allowing for a single transaction to update multiple resources.

"Distributed transaction processing is a very hot item for us," said Blayne Marling, assistant vice president of architecture at GTE Telephone Operations in Irving, Texas. "I'd like to be able to put up a heterogeneous network and be able to frame transactions across the desktop with integrity taken care of as part of a ubiquitous TP monitor."

DEC officials are also com-

pleting discussions with Transarc Corp. that could lead DEC to license portions of Transarc's distributed transaction processing technology, according to industry sources.

The deal is expected to be finalized by the fall. Transarc developed extensions to the Open Software Foundation's Distributed Computing Environment Remote Procedure Calls (RPC) to include a transactional RPC.

Transarc officials refused to comment on the deal. However, they said they have extended DEC's distribution services to allow a single transaction to update databases running on different machines with integrity controls.



'AN
ARCHITECTURE
OF POSSIBILITY
IS ROOTED IN
THE CONSTANT
OF CHANGE'

The on-line enterprise is a new challenge for the enterprise architect. The architecture of the on-line enterprise is a new architecture.

Challenge

Technology

Today's on-line enterprise is a new challenge for the enterprise architect. The architecture of the on-line enterprise is a new architecture. The on-line enterprise is a new challenge for the enterprise architect. The architecture of the on-line enterprise is a new architecture. The on-line enterprise is a new challenge for the enterprise architect. The architecture of the on-line enterprise is a new architecture.

The on-line enterprise is a new challenge for the enterprise architect. The architecture of the on-line enterprise is a new architecture. The on-line enterprise is a new challenge for the enterprise architect. The architecture of the on-line enterprise is a new architecture. The on-line enterprise is a new challenge for the enterprise architect. The architecture of the on-line enterprise is a new architecture.

 **SYBASE**

CLIENT/SERVER ARCHITECTURE FOR THE ON-LINE ENTERPRISE

Air transport industry flying the OSI banner

BY ELISABETH HOWITT
CIVIL

CAMBRIDGE, Mass. — Air transport may become only the second industry to undertake a wholesale migration to the Open Systems Interconnect (OSI) standard, following the lead of the U.S. government.

First, however, the International Air Transport Association (IATA) must persuade its financially troubled member airlines to undertake a costly systems overhaul that it hopes will realize long-term, often unquantifiable benefits.

Last week's meeting of the international airline and aviation industry group resembled a revival meeting, as airline officials exhorted colleagues to jump on the OSI bandwagon for the good of the industry. The centerpiece of the meeting was the Airline OSI Profile, a set of guidelines for OSI-based interoperability across the airlines.

Developed by the IATA's Architecture Strategy Group, with input from almost 20 air carriers worldwide, the document should be approved by ballot by early August, the IATA said. The architecture will include OSI routing and global addressing protocols, along with X.25 for the underlying connections, accord-

ing to Paul Hennig, a staff engineer at United Air Lines.

Companies that do not start implementing OSI will soon find it increasingly difficult and expensive to communicate with the rest of the industry, John C. King, vice president of communications and information services at Delta Air Lines, warned in his keynote address.

OSI now a reality

Behind the IATA's OSI push is a growing realization on the part of airlines worldwide that OSI is the most effective way to ensure communications, said Gordon Lew, a systems engineer at American Airlines.

"A lot of people have tended to view OSI as mythical and in the future and TCP/IP as here now," Lew said. "However, 90% of TCP/IP manifestations are on the LAN, while OSI is for both LAN and wide-area network communications."

In parallel with the IATA's Airline OSI Profile effort, a separate consortium is working on the Aeronautical Telecommunications Network (ATN), an OSI- and X.25-based architecture designed to facilitate communications between aircraft and ground-based airline and air traffic control systems.

Active members of the proj-

Dallas discussion

Participants at last week's IATA conference discussed the following goals and goals of OSI migration:

Goals

- Standard APIs were program development and testing costs.
 - OSI protocols are better designed than current "standards" to support any-to-any links.
 - Modularity paves the way for future migration to emerging network technologies, such as frame relay.
 - Industrywide adoption of OSI would facilitate new connections between different parts of the industry.
- Goals:
- To study to replace current communications equipment and software.
 - Upper level protocols still not finalized.
 - Benefits are a decade away.
 - TCP/IP is here now, and it works.



ect include the Federal Aviation Administration (FAA) and an assortment of computer vendors and airline network service providers. However, American and United Air Lines are the only two airlines currently participating. Hennig used the IATA podium to urge other airlines to adopt ATN.

ATN would enable aircraft to stay in touch with one another and with air traffic control on an ongoing basis as they fly overseas, Hennig said. This would allow aircraft to change flight patterns dynamically in response to changing weather conditions and wind patterns, saving fuel and time and increasing passenger comfort, he added. Right now, aircraft must keep far apart in strict flight paths because "the old systems can't communi-

cate," Hennig said.

However, OSI implementers who took the floor last week were frank about the expense and time associated with implementing the standard on current proprietary systems. American's X.25 migration, already a couple of years along, is expected to take as much as two years to complete, Lew said.

United expects to take about three years to implement ATN on its current Unisys Corp. hosts, Hennig said.

Speakers also acknowledged that it is next to impossible to formulate a short-term return on investment (ROI) for moving to OSI. And as one attendee pointed out, lack of ROI will make it hard for data processing departments to sell OSI to their managements.

months in one of the 30 closets where the LAN hubs reside, said LAN manager Dennis Bogart. Irvine Engineering is moving to put uninterruptible power supplies (UPS) in all phase closets.

Dangerous assumptions

Many users wrongly assume that all UPS devices include a surge suppressor or power conditioner, Bedeman said. However, some UPSs are simply battery systems that provide backup when the power goes off.

The McFarland Clinic p.c. in Ames, Iowa, had a UPS for its mainframe but no power protection at all when a power surge swept across its IBM terminal-to-host network, hitting 21 terminals out of 100.

"We lost the terminals, period," said Sandy Berk, the clinic's IS director. "The logic boards and keyboards were salvagable but nothing else." At a loss of nearly \$30,000, "we are definitely getting power protection," he said.

Companies such as Panamax, American Power Conversion Corp., Bravo Communications, Inc. and Black Box, Inc. have begun to sell devices that are said to be specifically designed to protect LANs, as well as power outlets, against surges.

DEC hit by Du Pont downsizing

BY NELL MARGOLIS
CIVIL

WILMINGTON, Del. — Du Pont Information Systems' ongoing move to business redundancy has inadvertently landed yet another blow on an already beleaguered Digital Equipment Corp. The chemicals giant's complement of VAX centers, 150 a year ago, will be down to 75 by the end of the year.

Even more chilling for DEC: Du Pont's target is to get down to 10, said Michael B. Emery, IS senior vice president.

While declining to specify a time frame for achieving that goal, Emery emphasized that DEC is far from alone in feeling the edge of the Du Pont axe. "We're looking at our five IBM data centers to see if we really need all of them," he noted.

Reducing redundancies

Since the company's 1991 decision to shrink its estimated \$1 billion annual computer and telecommunications technology tab by \$200 million, a slew of systems, software and services have been labeled dispensable.

In addition to this, Du Pont Information Systems has consolidated a wide range of redundant applications and pared an approximately 3,025-person worldwide payroll by 225 people through attrition.

And earlier this month, the firm announced that 275 more IS jobs will be cut this summer. Between next week and July 31, employees will be able to opt for early retirement, Emery said. If 275 IS employees do not volunteer, he said, "involuntary measures" will kick in.

Bigger picture

Du Pont Information Systems, Emery said, sees its slimmer shape as only the first step in a larger reorganization.

"In the past months, we have also evaluated the role of IS within the company," he noted. "What we found is, we're not just an order-taker here to deliver technology on demand. And we're not just an automaton; to begin with, there are some things that shouldn't be automated."

Rather, he said, "We're moving away from a service organization to something new." That something defies slick description, Emery said, but it has two clearly defined guiding principles: "On one hand, we're trying to be truly outstanding technologically. But the true measure of everything we do is, did we increase business value?"

The \$40,000 bolt from the blue

CONTINUED ON PAGE 1

The vendor also said the vast majority of these problems are low-level surges or sags. However, even minor disturbances often cause data loss, system glitches and invisible wear and tear on disk drives or network boards, said Jim Corwin, a product sales manager at communications system distributor Aster Brothers, Inc.

Gartner Group, Inc. has concluded that power disturbances are often behind common LAN problems, according to Bill Redman, a vice president at the Stamford, Conn., research firm.

Unprotected LAN

Furthermore, traditional surge protection devices that concentrate on the power grid leave the LAN vulnerable. Even installing a surge protector at each PC on the LAN may not be sufficient because the surge may choose the LAN as the most attractive path to the ground, according to Panamax, a San Rafael, Calif., vendor of power protection products for LANs.

This is what happened to the Association of Field Service Managers when lightning caused

a power surge on the Fort Myers service company consortium's Token Ring LAN. The surge destroyed components on 12 PCs, six printers and the association's private branch exchange system — to the tune of \$16,000.

"We had power protection on our AC outlets but not for the LAN," said George Keller, execu-

utive vice president at the association. "Now we have it on both."

Irvine, Calif.-based Irvine Engineering thought it had enough LAN protection from a power filtering system in the computer room that housed its servers — that is, until it began to experience power outages every few



Bobert Neuberger

DEC links with Ram Mobile, launches wireless strategy

BY ELLIS BOOKER
CIVILIAN

ATLANTA — The crowded air-space of wireless data networking will soon include systems and services from Digital Equipment Corp.

DEC swooped into the wireless arena at last week's International Communications Association show, announcing both a marketing alliance with a wireless network carrier and a systems integration program for users.

DEC officials also hinted that they were considering the development of portable computers specifically designed for wireless applications.

"Our strength for the past 10 years has been in networking ... and we view mobile data as an extension of enterprise networks," said Terri Richardson, DEC's worldwide business development manager for mobile data.

DEC's first wireless product, scheduled for availability in the first quarter of 1993, will be a wireless, two-way, electronic-mail option for its All-In-1 integrated office environment. DEC said it was developing a wireless version of Mobilizer, a software package that provides remote DOS computers with access into All-In-1 resources. There are currently more than 3 million All-In-1 customers, DEC said.

Sealed deals

DEC's wireless E-mail will use the nationwide wireless network run by Ram Mobile Data. Ram Mobile, with radio frequency-based packet data networks in 50 U.S. cities, is one of two nationwide packet data wireless carriers in operation today. The other carrier is Lincolnshire, Ill.-based Ardis, a joint IBM and Motorola, Inc. venture. Ram Mobile is a joint venture between Ram Broadcasting Corp. in New York and BellSouth Corp. here.

While Ram Mobile and its network are clearly a major part of DEC's strategy, the relationship is not exclusive. In announcing its DECmobile systems integration program last week, DEC stressed that it would offer users a variety of solutions for end-to-end wireless networking. One of those solutions could even be IBM's CellulPlan 2, a technology for sending packet data over analog cellular telephone networks that IBM and nine cellular carriers will test this summer.

Richardson said her organization plans to study the data-over-cellular technology as details are released. Another possibility for DEC's entry into the wireless market could be a new generation of portable computers, but

the market today."

DEC already has strategic relationships with Fujitsu Personal Systems — formerly Poquet Computer Corp. —

and Husky Computers, Inc. Laptop, pen-and-paper-based computer vendors have uniformly recognized the synergy between



INTERNATIONAL
COMMUNICATIONS
ASSOCIATION

their mobile systems and wireless technology.

DEC also signed an agreement last October with Ericsson Mobile Communications AB, which provides the RF map to access Ram Mobile's wireless network. Ram Mobile's network uses the Mob-

tex protocol, an open standard developed by Ericsson and Swedish Telecom.

Robert Rosenberg, president of Insight Research Corp., a market research company in Livingston, N.J., cautioned that the "explosion of data transport and marketing announcements" in the wireless market does not point to which technology, vendor or alliance will win in the end.

No LAN Is An Island

Out with the Old Way. In with the Gateway.

To enable your LAN users to communicate with the rest of the world, you can give them each a modem. That's the old way. And then there's the "Gateway". Gateways let your LAN users share modems. And the MultiCom/AsyncGateway allows more users to share fewer (and faster) modems.

More Users, Fewer Modems. Higher Speed, Greater Efficiency.

The MultiCom/AsyncGateway incorporates high speed V.32 and V.32bis Multi-Tech modems and 57.6K bps serial ports, so your users tie up modems for shorter periods. Unlike some gateways that require dedicated dial-in or dial-out modems, the MultiCom/AsyncGateway lets your users dial in or out at will.

Make All of Your Users "Power Users"

The number to call: (800) 328-9717. Because no LAN is an island. And there's no better way to accomplish LAN-to-WAN connectivity than with Multi-Tech.

MultiTech
Systems

Multi-Tech Systems, Inc., 2205 Woodbine Drive
Mounds View, Minnesota 55112 U.S.A.
(612) 785-3500, (800) 328-9717, U.S. FAX (612) 785-9874
International Telex 4998372, International FAX (612) 331-3180

NEWS SHORTS

Novell expands LAN monitoring

Novell, Inc. announced that its LANtastic local-area network monitoring system will support Remote Network Monitoring. The Simple Network Management Protocol specification for collecting LAN monitoring and analysis data. In addition, the enhanced LANtastic will be available as a NetWare Loadable Module. This will enable Novell servers to collect traffic statistics on all attached LANs; it also expands NetWare Management System's troubleshooting and network mapping capabilities to a variety of LAN protocols, Novell said.

MCI widens international ties

MCI International, Inc. announced agreements with seven international telecommunications companies, under which MCI's Global Advantage service will provide one-source ordering, provisioning and management for the carriers' private-line services. The carriers include the Swiss, German, French and Spanish Postal Telephone and Telegraph authorities, as well as network services in Italy, Chile and Costa Rica. MCI now has one-stop agreements with 19 overseas carriers.

Better videoconferences — when?

Vidcon in Thousand Oaks, Calif., and GC Technologies Corp. in Japan announced a new generation code-decoder that, they said, significantly improves videoconferencing quality over long-distance links ranging from low-speed dial-up to T1 lines. It complies with the CCITT H.264 standard for digital video compression. Pricing and availability were not announced.

IBM cuts due in Boca Raton

IBM has quietly cut between 300 and 400 workers at its Entry Systems Division and Entry Systems Technology Group in Boca Raton, Fla. An IBM spokesman said the company has given notice to a group of support workers that they can take early retirement, as several were of absence or retirement within the company. An IBM spokesman said no OS/2 programmers or hardware engineers were targeted.

Acer debuts multimedia machine

The Acer Group entered consumer electronics with computing last week with the announcement of the Personal Activity Center. The center comes equipped with an answering machine, telephone, fax machine, alarm clock, compact disc/mini-disc memory drive and stereo features, among others. The 80386SX-based machine also comes preloaded with several applications, including DOS, Microsoft Corp.'s Windows 3.0 with Multimedia Extensions and Microsoft Works. Available now, the center is priced at \$2,295 to \$2,695.

Software AG embraces Macintosh

Software AG of North America, Inc. will release software by the end of the year that links its database and application development technologies with the Apple Computer, Inc. Macintosh. The Macintosh will become an integral part of Software AG's entire architecture for integrating graphical user interfaces into a client/server setup. Software AG also said it is working on a number of Macintosh products, including a desktop version of the Natural AGL.

Short takes

Hitachi Data Systems Corp. has announced its first installation of an HDS EX 210 "Samurai-class" mainframe — six months ahead of schedule — at Ericsson Data Services Nederland B.V. ... The top spot at systems integrator Technology Solutions Corp. is now a two-way tie: Chairman Albert Beale Jr. and President Melyna Bergstein have been named co-chief executive officers of the Chicago-based firm. ... IBM and Comshare have announced plans to define a technical environment for integrated decision support applications under IBM's Information Warehouse. ... RasterOps Corp., a maker of professional imaging products, has agreed to acquire desktop video production vendor Truevision, Inc.

EDS lands big chain store deal

10-year pact with Smith Food & Drug eliminates job of retailer's IS chief

BY MARK HALPER
COWLEY

SALT LAKE CITY — Electronic Data Systems Corp. last week captured an estimated \$160 million, 10-year, distributed processing outsourcing job with Smith Food & Drug Centers, Inc., a move sure to mute its client/server critics.

It also cost Smith's former information systems chief, Donald Hillery, his job. His position was eliminated as a result of this contract, and he has left the company. Another 120 Smith IS employees will transfer to EDS.

The Dallas-based services company's contract with Smith, a \$2.21 billion retail operation, is said to be the first of two retail sector outsourcing projects that EDS will soon announce.

Robert Allen, president of EDS' commercial services business unit, told analysts two weeks ago in Dallas that EDS is on the verge of closing a contract with a large national chain. Analysts estimated that that deal will carry a \$500 million price tag.

New strategy

EDS overhauled its retail strategy a year ago in an effort to win more business in the wake of IBM's outsourcing win with jewelry chain Zale Corp. in Irving, Texas. The company adopted a

soft-ell approach whereby it pitches business re-engineering that could lead to outsourcing jobs.

The Smith contract calls for EDS to move the 109-store food and drug chain off Smith's 3084 IBM mainframe in Salt Lake City and onto a Unix-based distributed computing platform, said Smith Executive Vice President Robert Bolinder.

EDS will first move operations to mainframes at one of its own computer centers, a process that will take about six months, Bolinder said. He was not sure how soon EDS would bring the Unix platform on-line. Unix hardware and software details were not available.

The win comes as some observers are openly questioning the ability of mainframe-rooted EDS to provide client/server systems. It also follows EDS' denial of reports that a lack of client/server wherewithal jeopardized its outsourcing job at Freeport-McMoan, Inc., a New Orleans-based mining company (see story below).

Bolinder said his company did not specifically request a client/server approach. Smith chose

EDS over both IBM's Integrated Systems Solutions Corp. subsidiary and Irving-based Kimberly Clark Computer Services, Inc. because "they made the best proposal," he said.

Bolinder would not confirm that the job is valued at \$160 million. He said a number of variables make it difficult for him to state a fixed amount.

EDS takes over responsibility for all corporate data center activity, telecommunications and application development, an EDS spokesman said. Smith will continue to operate systems at its stores, each of which has an NCR Corp. Tower that drives programs for various operations.

EDS will transfer data communications from the leased lines that Smith now uses to EDS' own network. The data communications network ties Smith's headquarters with its three distribution centers and its stores.

Ned Cushey, who was second in charge of IS operations at Smith, was named vice president of systems and technology in charge of managing the EDS relationship.

or Mike Arnold said.

The company's fertilizer business, corporatewide accounting, tax programs and human resource applications will continue to be mainframe-based, he said.

Neither Arnold nor officials from SSC, Andersen Consulting or ComputerLand would elaborate on the points they are still ironing out.

Closing outsourcing deals can be a drawn-out process. For example, EDS took 16 months to sign a deal with Continental Airlines after publicly announcing the contract.

Hell the cost

Terry Quinn, senior technology analyst at Kidder Peabody & Co. in New York, estimated that Freeport's pending contract with IBM, Andersen Consulting and ComputerLand will cost half as much as what EDS had been charging.

Freeport, which was a \$196 billion company when it first signed with EDS in 1988, had revenue of \$1.6 billion in its last fiscal year.

Since the contract's inception, Freeport has sold many of its business units to concentrate on gold and mineral discoveries in the Gulf of Mexico and Indonesia.

Outsourcing switch at Freeport raises questions

BY MARK HALPER
COWLEY

NEW ORLEANS — In the wake of Freeport-McMoan, Inc.'s outsourcing split with Electronic Data Systems Corp., questions linger regarding how much the mining company is paying to sever the arrangement, and whether it will close deals under negotiation with IBM, Andersen Consulting and ComputerLand Corp.

Freeport and EDS recently agreed to part ways after they were unable to agree to a pared-down contract sought by Freeport.

Freeport had already renegotiated the original 10-year, \$200 million deal once before, cutting the cost by 25% to 35% in early 1991, according to EDS.

Least money

Analysts noted last week that the breaking represents one of outsourcing's classic traps: It is costing Freeport money to break the contract, though nei-

ther side will say how much.

"You have to negotiate some sort of departure fee," said Steve McLellan, a Los Angeles-based analyst at Merrill Lynch & Co.

Freeport must now negotiate the tricky process of switching its outsourcing business to IBM's Integrated Systems Solutions Corp. (ISSC), Andersen Consulting and ComputerLand. The three companies have agreed in principle to provide outsourcing services ranging from mainframe processing in Freeport's home office to client/server solutions at the company's Grasberg, Indonesia-based gold and copper mining operations.

Analysts pointed out that switching outsourcing is a delicate proposition that requires cooperation between the outgoing and incoming providers.

The transition calls for transferring software from EDS mainframes in Plano, Texas, to IBM mainframes in Lexington, Ky., Freeport Chief Information Offi-

No Matter How You Slice It

*Personal
Computer*



Mainframe



Workstation



Minicomputer



The SAS® System Pulls Together All the Pieces of Cooperative Processing.

When it comes to cooperative processing, one software is more cooperative than others. The SAS System gives you the freedom to decide how to segment an application. Plus the flexibility to match computing resources to the tasks at hand.

With the SAS System, it's easy to slice your computing tasks into their component parts: data access, data management, data analysis, and data presentation. And because the SAS System is entirely hardware independent, you can select the most appropriate resources for performing each task—in the most efficient way—across mainframes, minicomputers, workstations, and personal computers.

No matter how you decide to configure an application, you're assured that each slice will communicate with all the others. That's because the SAS System fully supports industry-standard communications protocols, providing full connectivity across platforms.

Call Today for an Executive Overview.

Find out how the most cooperative software brings all your computing platforms together—to save your organization both time and resources. For a free executive overview of the SAS System's approach to cooperative processing, give your Software Sales Account Manager a call at 919-677-8200. Also call to reserve your place at our free SAS System executive briefing...coming soon in your area.



SAS Institute Inc.
Software Sales Department
SAS Campus Drive
Cary, NC 27513
Phone 919-677-8200
Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc.
Copyright © 1981 by SAS Institute Inc. Printed in the USA.

ing never before \$890 terminal.

Now stare here.



Introducing the WY-325 color terminal for only \$890. (Yes, you can believe your eyes.) It's ergonomically advanced. It emulates general-purpose terminals such as DEC, ADDS, TeleVideo and, who would have guessed, Wyse. And the WY-325 replaces a monochromatic terminal without making changes at the host computer or to the application. Although this list of benefits could go on, the price alone should color your thinking about terminals. If so, call your local distributor or call us at 1-800-GET WYSE.

WYSE
| | | |

FDDI prices plunge toward affordability

IBM, 3Com lure users wary of the technology with announcements of lower cost fiber products

BY JOANIE M. WEXLER
OF STAFF

WASHINGTON, D.C. — The price of 100M bit/sec. local-area networking, once-down toward the vicinity of user budgets last week, when \$1,300-and-up Fiber Distributed Data Interface (FDDI) products emerged from 3Com Corp and IBM at the Interop '92 Spring show.

The aggressively priced adapters and concentrators for both IBM Type 1 shielded twisted-pair copper wire and fiber cabling will likely move the high-speed LAN closer to the corporate masses. This is because more users may be able to justify FDDI's relatively high connection costs, which currently average \$4,500 per port for connections to both of FDDI's counter-rotating rings, according to analysts.

The price issue has been compounded by users' uncertainty

about whether their applications yet justify the technology and whether future higher speed switched LANs will leapfrog FDDI.

"I'm still trying to determine if the network is my bottleneck," said Kurt Muehlbauer, supervising analyst in the information systems department at Chicago-based utility Commonwealth Edison. He said one reason he attended Interop '92 Spring was to find an inexpensive tool for analyzing traffic loads on his 21 Ethernet segments "to determine if I even need to move to FDDI."

Indicators that bandwidth-hungry applications for FDDI are indeed imminent, however, include a *Computerworld* survey of more than 200 attendees at the Interop show last October, which tagged FDDI as users' premier interconnect deployment scheme for the next 18 months (CW, May 11).

Users cited such applications

as graphics, computer-aided design and manufacturing and imaging as the forces driving them to explore FDDI.

For example, show attendee Doug Barnhart, a senior engineer at the University of Ten-

FDDI

nessee in Knoxville, is considering FDDI for an emerging medical imaging application that must traverse two sites 26 km apart. "FDDI is one of the few technologies that can handle these distances at those speeds," Barnhart noted.

Advocating FDDI to the desktop, 3Com last week rolled out a \$1,300 Type 1 and a \$1,500 Type 2 adapter card — both for Extended Industry Standard Architecture (EISA) bus computers — slated to ship in the fourth

quarter. The cards attach to both FDDI rings.

These prices are nearing affordability for a data network manager at a large East Coast publishing company who asked not to be named. He cited \$1,800 for each dual-fiber connection as the price point where "we would start putting FDDI on everyone's machine." He said he is uninterested in the copper alternative because of its future bandwidth limitations.

3Com designed the EISA cards with the scrambling technology incorporated in one of the formal standards committee proposals for FDDI over unshielded copper.

This will likely render 3Com adapters compatible with an official standard, expected next year's end, said George Prodan, 3Com's adapter product manager.

Signal scrambling is necessary for implementing 100M bit

sec. networking over unshielded copper in order to avoid the accumulation of electromagnetic emissions, said Prodan, who is also a member of the national FDDI standards committee.

Backbone-oriented IBM unveiled a more expensive, as well as more expensive, line that included Type 1 and fiber adapters and a Type 1/fiber FDDI concentrator, all supporting Micro Channel Architecture computers and slated to ship in September. The per-connection price of IBM's products is about \$1,600 for copper and \$2,100 for fiber for a single-attached adapter card in a high-end Personal System/2 that links to a dual-attached, 24-port concentrator.

While IBM and 3Com's moves were hailed by several observers as a big stride toward FDDI, they also continue to push for lower costs.

"AFC is about \$2,000, and an Ethernet adapter card for it costs between \$100 and \$200," Barnhart said. "When the cost ratio between our Sun workstations and the FDDI card is the same, FDDI will certainly be more attractive."

RBOCs cast low-cost wide-area network

CONTINUED FROM PAGE 1

Users coiled and snubbed over sample frame-relay pricing offered by US West and Bell Atlantic Corp. US West filed a tariff in Nebraska earlier this month for 56K bit/sec. frame-relay service priced at \$104.90 a month for a single permanent virtual circuit (PVC) and \$87 per PVC for users of five PVCs, said Jerry Parker, vice president of customer solutions.

Customers with more than five PVCs would default to flat-rate pricing, he added.

Several local carriers said their pricing would be in line with US West's. But no pricing was given for SMDS.

Bell Atlantic said its frame-relay service at T1 rates will range between \$550 and \$650 per month, with a one-time \$1,000 installation charge per line.

"We anticipate that users could save \$30,000 to \$40,000 per month [compared with] leased T1 lines with this pricing scheme," if they are connecting between 10 and 12 sites, said John Seasholtz, Bell Atlantic's vice president of network technologies.

The pricing "seems awfully cheap," said Rich Harrington, a technical officer at the First National Bank of Chicago, who said local-area network interconnect is catapulting his firm into flat-

packet evolution.

"I thought it would be in the thousands of dollars per month," Harrington added.

Frame-relay standards are currently limited to PVC-type offerings, which means that users set predefined links with specific sites. SMDS, on the other hand, more closely resembles a switched public telephone network, where any member of the network can communicate on the fly with any other member.

All but nine states

The rollout plans are a big stride in the fast-paced evolution. However, nine states will not figure in the Bell's immediate plans: Iowa, Louisiana, Mississippi, North Carolina, New Hampshire, Vermont and Maine.

An official at Sprint International said his company is prepared to offer the long-distance connections between Bell regions for both services when they become available — a key user concern surrounding the reach of telephone company flat-packet services.

However, AT&T and MCI Communications Corp. have made no statements about interconnectivity.

While the announcements fill many gaps, "we still need the

whole picture," said Bill Everett, manager of telecommunications planning at Consolidated Rail Corp. in Philadelphia (see story page 6).

"We have to see that there is incentive to change from existing technologies," Everett ex-

plained.

Ralph Sandridge, network planner at Martin Marietta Corp., has been testing frame-relay service from an unnamed carrier for consolidating multiple networks onto one backbone. He said that he has "found frame re-

lay to be fast compared with X.25."

Sandridge also said he is controlling the firm's migration to frame relay by restricting the initial protocols that can run across it while he determines congestion patterns.

Apple lets loose with networking barrage

BY JAMES DALY
OF STAFF

WASHINGTON, D.C. — Apple Computer, Inc. extended its reach into the corporate enterprise last week by rolling out additional links to the IBM, multiplatform and open systems world.

Top of the list of networking products introduced at Interop '92 Spring last week were a Token Ring-based Macintosh network interface for Apple's Transmission Control Protocol/Internet Protocol (TCP/IP) connectivity package and three products designed to address the Open Systems Interconnect (OSI) model, including X.400 and Open Document Architecture.

Analysts said the additions are vital if Apple wants to increase its penetration in corporate and institutional environments. "If Apple wants to be a legit player in multivendor networks, it has to trot out some products," said Rich Villars, an analyst at International Data Group, a research company

based in Framingham, Mass.

Macintosh users have long cried out for Apple to backfill its connectivity options. Improved TCP/IP connectivity, for example, has long made the Top 10 list of requested items published by such key Apple user groups as MacCS.

"If Apple is going to start playing with the big boys, they've got to connect to everyone," said Rob McPhee, a development engineer at 802, Inc., a Dallas-based Du Pont Co. company who now links his Macintosh into a TCP/IP network via public domain software.

Apple's MacTCP Token Ring Extension will allow Macintosh users to address an IBM host via TCP/IP or Token Ring networks. MacTCP's software system drivers and programming libraries provide transmission services for developers who want to create Macintosh applications that use TCP/IP networks. It is co-resident with AppleTalk protocols. The Token Ring Extension will be available late next month and will be bundled

into Apple's MacTCP 1.1 products.

Apple's new OSI products — MacX.400, MacODA and MacOSI Transport — will enable users to send electronic mail from their Macintoshes to non-Macintosh, proprietary E-mail users. The complementary MacX.400 server, which sells for \$5,000, can connect to public X.400 networks or X.400 backbones. The cost of the developer's kit will sell for \$200.

Document interchange MacODA is a software translator that uses the Open Document Architecture standard for document interchange between different applications and platforms, including documents that contain complex formatting and graphics. It is priced at \$149.

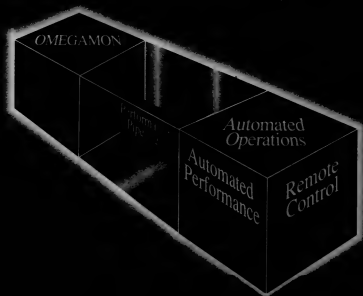
When used in conjunction with the MacX.400 package, MacODA provides users with a seamless exchange to text and graphics in the PSI environment, Apple officials said.

MacOSI Transport enables Macintosh users to connect their Macintosh applications to OSI environments.

The MacOSI Transport Kit will sell for \$200; a developer's kit will also cost \$200.



When is Candle's data center Automation Solution unbeatable? With OMEGAMON!



Better together, forever.

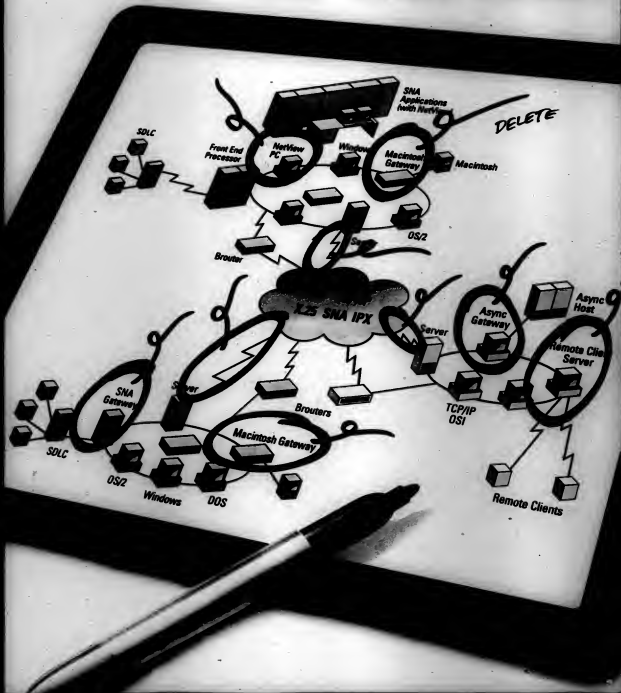
- **OMEGAMON integration by design:** *OMEGAMON* integrates with *IBM*® *VM* *PERFORMER* and *VM* *REMOTE*—a design that provides the ultimate in automation.
- **Machine speed outage protection:** *The Performer* helps reduce the impact of system threats such as *VM* deadlocks and *DB* storage constraints so that the automation solution goes to work to protect system reliability and performance.
- **Automated problem resolution:** *Turn-key functions* automatically detect and prevent critical problems such as *CMS*® *EXEC* *VS* *LOCK*s, *VS* *LOCK*s, *VS* *DB2* thread lockouts, and more.
- **From the SystemView powerhouse technology:** *The Performer* can detect...

Call 1-800-843-3970 today and ask for Department 333 or information on Candle's Automated Solution or OMEGAMON® media.



!Candle
Making your systems perform.

No One Can Help Of Your Enter



You Get More Out prise Network.

Putting Together More Effective Networks With Less Hardware.

Enterprise networking is an enormously complex endeavor. That's why we've designed our enterprise networking products to simplify the task rather than to add to it. By giving you greater capability in less hardware.

Our goal is not just to provide the most extensive and capable set of networking products, but to offer networking that is easy to choose, deploy, and reconfigure. Creating open, global computer networks that are as easy to use, as efficient, and as accessible as the telephone network.



Open Networking Environment (ONE) combines NCR's strength in industry-standard connectivity with AIX's broad range of advanced networking products to offer networking solutions no other company can match. A truly open environment that can turn your information systems into a competitive weapon. Improve your responsiveness. Control costs. And give you the flexibility to manage change as never before.

We're the UNIX® networking leader. With the people, expertise, and products, including the industry's most complete SNA connectivity offering, to implement connectivity solutions worldwide.

ONE is the first totally open networking architecture from a major computer vendor. It's designed to give you transparent, enterprise-wide access across multiple networks, machines, and software, no matter what proprietary or transitional environment you may currently be using.

Find out how to get more out of your enterprise network, phone 1-800-CALL NCR for a free brochure. We're putting together the future of networking.



Open, Cooperative Computing.
The Strategy For Managing Change.

CA outlines broad-based PC strategy

BY THOMAS HOFFMAN
CH STAFF

ISLANDIA, N.Y. — Computer Associates International, Inc. last week detailed its plans for a wave of personal computer-based software products and up-

grades slated for fall delivery.

Chief among these is a mainframe-based electronic-mail system to connect clients on Microsoft Corp. Windows-based workstations with host computers using an X.400 link.

A Microsoft Windows Net

Technology tool kit for users is also in the works, according to Nancy Li, senior vice president of research and development. She did not provide details.

In addition, CA Chairman Charles Wang said the company will unveil a PC database strate-

gy within two weeks of the expected June date for the Securities and Exchange Commission's approval of CA's bid to acquire Nantucket Corp.

The announcements were made at CA's Partnership Conference for 350 distributors, val-

ue-added resellers and other business partners.

CA also announced that it has acquired three more PC software packages.

Two of the new product acquisitions are Visual Report Writer from Working Set, Inc. and Realizer from Within Technologies, Inc. — are targeted at expanding the company's presence in the Windows application environment, while Purchase Order Manager from Crystal Services, Inc. will add additional functionality to CA's CA-ACCPAC Plus Accounting series PC software.

Analysts critical

Despite a blitz of new products, not everyone is impressed with CA's PC software direction.

"There's no long-term view here at all," said Richard Finkelstein, president of Performance Computing, Inc., a Chicago-based database consulting firm.

Analysts said CA is working hard to build a presence in the PC software market but still fails to demonstrate a coherent strategy.

Realizer "fits in nicely with CA's emerging product set for CASE tools," said Andrew Mahon, a senior analyst at New Science Associates, Inc., a Southport, Conn.-based market research firm.

"People don't have enough sense of what products we have. We need to work on that," Wang said. "I promise you, you will see a lot more in the year to come."

"They've done more work in PC software in the last year than they've done in the two years before this," Finkelstein said.

Three times over

According to CA Senior Vice President Sany Kumar, the company tripled its North American microcomputer products field staff when it reorganized its operations last month.

Then there is the continuing stream of software acquisitions. Visual Report Writer is a report generation program for Windows 3.1 that provides access to SQL, CA's CA-dBase, Borland International, Inc.'s dBase and Microsoft's Clipper dBase/xBase databases.

Realizer is a graphical Basic development environment tool that competes with Microsoft's Visual Basic, but the product is said to lack necessary third-party support.

THE RING LEADER IS ON A ROLL.

First in token ring technology.

Madge Networks is widely recognized as the leader in token ring technology. Madge delivers the highest performance, reliability and compatibility across a broad range of token ring products. So when companies like Hewlett-Packard, SynOptics, Cisco, Xircom and

ADC/Fibermux want to deliver token ring solutions to their customers, they turn to Madge.

First in token ring performance.

In test after test, Madge consistently scores highest. In the latest NSTL study, Madge 16/4 adapters were first in performance, features and usability.

Madge adapters significantly improve the performance of every workstation, server and gateway in your network. We also deliver the industry's highest per-

forming source routing bridges, network management products and cabling system hubs.

First in token ring support.

Madge offers the only comprehensive installation and support guarantee in the industry. A toll-free hotline. On-site technical support. A five-year product

warranty. And a money back guarantee if any Madge card is not successfully installed.

First in token ring price/performance.

Madge is rolling back its prices to deliver the industry's top price/performance combination. Until September 30, you can get the highest performing 16/4 token ring adapters, and save as much as \$8,000!

Ask about our Intropack II offer now.

Don't pass up this opportunity to Run with the Ring Leader.



THE RING LEADER

Madge Networks, Inc., 42 Airport Parkway, San Jose, CA 95110 (408) 441-1300 Fax (408) 441-1305

©1991, an independent division of Digital Equipment Corp. This report was published in the PC Design Report Series. Ring Leader and Intropack are trademarks of Madge Networks, Ltd. All other trademarks are the property of their respective owners. ©1991 Madge Networks, Ltd.

Call 1-800-TR-4MADGE
and Save \$8,000!

COMPUTERWORLD

CAREERS
ON-LINE
508 879-4700

with your computer/ modem



KnowledgeWare

Are you too busy fixing old applications to think about getting new technology off the ground?

Every day, more and more IS managers appreciate the tremendous opportunities offered by new technologies such as client/server, cooperative processing and graphical user interfaces. Meanwhile, the pressure to maintain existing systems never lets up.

KnowledgeWare understands your need to maintain current systems. Our Application Development Workbench® family now includes ADW/Pinpoint, Inspector and Recoder to help you understand, analyze and document existing applications.

And a reengineering strategy that underlines our commitment to bring the focus and discipline of full-lifecycle CASE technology to redevelopment.

At the same time, KnowledgeWare continues to expand the scope of forward engineering. Our Construction Workstation-GUI brings the advantages of integrated CASE to the development of applications with graphical user interfaces operating in client/server and cooperative processing environments.

These new products demonstrate our progress toward helping you meet today's challenges. While allowing you to adopt technology that takes you into the future. And we offer the training, support and technology expertise to ensure your success. Call KnowledgeWare at 1-800-338-4130



KnowledgeWare®

THE BEST CASE FOR YOUR BUSINESS



for complete information on the CASE industry's most comprehensive reengineering and development strategy. Launch your company into the future of IS management.

AD/Cycle is a trademark and IBM is a registered trademark of International Business Machines Corporation.

NEC presents the first built-in

We know what you need to survive. You need a network server that's compatible, reliable and able

to grow with your needs. You need a system that can keep up with LAN and multi-user demands.

One that's equipped with the latest Intel® technology, Novell® and Banyan®-approved, and one that meets today's EISA standards.

In other words, you need a PowerMate® Express™ server from NEC.



We adapt to your environment.

We give you total subsystem modularity and scalability, including CPU, memory, video and disk subsystems to support future performance needs. Plus 10 EISA

486 servers with a survival instinct.

Features:	NEC PowerMate® Express Servers	COMPAQ® Systempro/LT Series	AST® Prestige SE 433 Series	Advantage
1. # SIMM sockets standard	16	4	4	NEC
2. Maximum RAM capacity	112	64	80	NEC
3. Internal hard-drive storage capacity	5GB	4GB	2.4GB	NEC
4. Power supply	388W	355W	300W	NEC
5. Internal cooling fans	4	2	2	NEC
6. Total expansion (EISA slots/drive bays)	20 (10/10)	18 (7/11)	17 (10/7)	NEC

slots and 16 standard SIMM sockets to handle additional memory and adapter cards.

Our CPU scalability goes from 486/33, 486/50 and beyond.

Memory scalability goes from 8 to 112MB. And disk scalability, from 240MB to 5GB. All at affordable values.

We can take the heat.

Our server's SCSI disk controller can include up to 16MB of cache. And its 128-bit memory path is four times as wide as the traditional 32-

bit memory path, providing you 0-wait-state performance. All of which means you can handle data-intensive applications or networking demands with ease.

We've also given each of our servers a generous 388-watt power supply to handle even the most power-hungry components. As well as a four-fan array that enables your system to keep cool—and keep working—under any amount of pressure.

Call 1-800-NEC-INFO (in Canada, 1-800-343-4486), or NEC PowerMate® at 1-800-344-0476, *XPRESS (977377), for immediate literature.


A well-balanced system is a weapon.

Compatibility. Adaptability. And, reliability. Compare our PowerMate Express servers with the competition's and you'll find these features don't come with every computer system.

You'll also find that there's only one company worth trusting your survival to.

Next time you need a mission-critical PC or network server.



Because  is the way you want to go.

NEC



ADVANCED TECHNOLOGY

New-generation screens are a tough nut to crack

IBM Japan/Toshiba joint venture well-supported, but cost, materials and market interest questions remain

BY LORI VALIGRA
ELECTRONICS SERVICE

Standing in stark contrast to the other major draw in the Western Japanese city of Hiogo — an ancient castle known to many westerners from the movie "Shogun" — flat display maker Display Technologies, Inc. (DTI) is pushing the edge of manufacturing technology.

DTI's product, a thin-film transistor (TFT) LCD, is so difficult to manufacture that even a tiny speck of dust can humble a multimillion-dollar production line. Such flaws could render 60% of the 10,000 screens made in a month suitable for only the junk pile.

Added to that are high materials costs, uncertain supply lines, a dearth of specialized capital equipment and a market that is skeptical of the practicality of the new, high-priced screens.

Experienced parents

Ironically, this is no run-of-the-mill start-up. IBM Japan Ltd. and Toshiba Corp., one of the world's largest producers of laptop and notebook computers, have invested a combined \$253.8 million in the \$123 million joint venture to date. Some \$105 million went toward state-of-the-art manufacturing equipment.

DTI was established in November 1989 and rolled its first products off the line in October 1991, two months behind schedule. The 304,000 sq ft DTI factory, leased from Toshiba, in-

cludes 107,500 sq ft of clean rooms.

The company has strong management backing, with five board members from each parent company, including Nobuo Miya, a key technology driver for IBM Japan's personal computer business and now a vice president at parent IBM in the U.S. Each company also contributed 20 engineers, 15% of whom have a semiconductor background.

Added to that is the advantage of having two ready-made major customers: IBM Japan and Toshiba, which will share all the production equally during the seven-year life of the joint-venture agreement.

But all these seemingly inherent advantages leave many questions unanswered about the TFT LCD market, which Toshiba estimates will comprise half of the \$7.7 billion demand for LCDs in 1995. For example, the factory can completely fill demand from its parents, two of the biggest players in the personal computer market, for five to six years, according to DTI's senior executive vice president, Norio Okumura. He added that IBM has no plans to make the screens in the U.S.



Joe Osumi

Though Okumura and other DTI executives envision a broad market for TFT screens — known for their crisp color images, light weight and relatively low power consumption — the costs of the current screens are too high to make them attractive in price-sensitive consumer products, such as flat televisions or navigation screens for automobiles.

The cheapest screen to make now is 10.4 inches, and it costs about \$2,300 to produce, according to DTI President Koichi Ogura. That is more than the price of a book-size computer with a conventional LCD; a color TFT LCD more than doubles the price of a portable computer.

Rare goods

Thirty percent of the screen's cost is for materials, such as the color filters and thin glass needed for the screens, both of which have limited sources. In fact, the glass is only available from Corning, Inc. in the U.S.

Ogura said some outside estimates figure the cost per screen could come down to \$385 by 1996. But any price premium could hamper sales, according to one market watcher in Japan. Cutting the price is a dual-edged sword: The U.S. already has

slapped punitive dumping tariffs on Japanese makers of TFT LCDs.

Still, without price reductions, the screens will likely remain niche products at best. "There is a serious cost problem now. The 10.4-inch screens are basically limited to office automation applications," Ogura said.

Low yields

There are several ways to trim costs: Increase yields, decrease component costs and boost volume. The factory will soon make 10,000 panels per month, half its total capacity. "Yields are not too high now. And there is a poor infrastructure industry for parts for displays, so there are problems with availability. High materials costs remain a very severe problem," Ogura said.

Raising yields is a continual challenge. The yield the first month of production was 8% — lower than expected, especially when considering the 80% target in two to three years. "Yields are about 40% now and are growing rapidly," Ogura said. "To increase yields we need new technology. We need to change the process many times." Even today's state-of-the-art capital equipment was not made to cope with the tolerances needed for TFT displays.

But that equipment is forthcoming because most major Japanese electronics companies are already working on TFT LCDs. Among DTI's competitors in 10.4-in. TFT LCDs are Sharp Corp., NEC Corp., Hitachi Ltd., Mitsubishi Corp., Sanyo Electric Co. and Canon Computer, Inc. — all with 640- by 480-pixel Video Graphics Array screens.

Benefits of active-matrix TFT displays

Lightweight, needing little power and sporting brilliant colors, active-matrix TFT LCDs have become the hottest display technology among Japan's major electronics companies.

The aim is to keep putting them into ever-lighter portable computers and to use them for televisions, large-size informational wall hangings, medical equipment and navigational devices for automobiles, airplanes and ships.

Active-matrix LCDs stemmed from work done in the early 1970s at Westinghouse Electric Corp. and RCA Corp. The display's technology is based on organic liquid-crystal molecules that can be aligned using an electric field. Their alignment determines how much polarized light can pass through the screen.

To create an image, light from a fluorescent bulb passes through a polarizer and onto a TFT liquid-

crystal panel. The liquid-crystal panel contains TFTs etched onto a plate of glass or amorphous silicon. Those transistors control voltages that can actually make the liquid-crystal molecules twist the polar-

OLD-FASHIONED CRT displays still hold the record in response time — less than 10 msec.

ized light to create lighter or darker subpixels. The light then passes through a color filter, with each subpixel assigned a red, green or blue filter.

It takes three subpixels to make one pixel of red, green or blue on the display.

The screen from DTI, an IBM Japan/Toshiba joint venture, has more than 300,000 pixels displaying 512

colors. The 640- by 480-pixel display is VGA-compatible.

Compared with conventional single-matrix displays, active-matrix screens have a switch at every cross point (pixel), which is equivalent to 1 million switches, far more than the amount used in single-matrix displays.

Active-matrix TFT technology is much faster than conventional super-twist pneumatic (STN) displays, which have 100 to 150 msec. response times, compared with 30 to 50 msec. for TFT.

"Many people use Windows now. With STN displays it is difficult to chase a mouse across the screen. But this is not a problem with TFT," said Hidenori Akiyoshi, director of engineering at DTI.

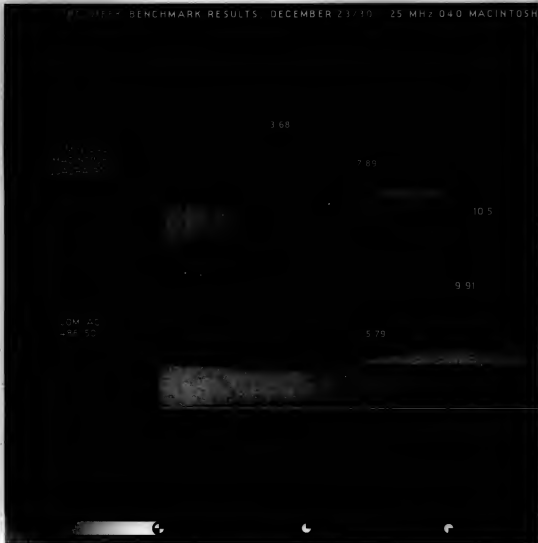
Perhaps ironically, old-fashioned CRT displays still hold the speed record in response time — less than 10 msec.

LORI VALIGRA

Add
Windows To
A 50 MHz
486 PC And
What Do
You Get?

Oh, About Two-third

PC BENCH - BENCHMARK RESULTS, DECEMBER 23/10 25 MHz 040 MACINTOSH



Apple and the Apple logo are registered trademarks of Apple Computer, Inc. PC Bench is a registered trademark of PC Bench Communications Company. Apple and Macintosh are registered trademarks and Macintosh Plus is a trademark of Apple Computer, Inc. Compuserp Design is a registered trademark of Compuserp Design.

ds Of A Macintosh.

QUADRA OUTRUNS THE 50 MHz 486



Now, the computer that helps you get more done can help you get it done faster.

Faster than what? Faster than a 486[®] Windows[™] PC, according to PC Week. In its benchmarks (at left), an Apple[®] Macintosh[®] Quadra[™] powered by a 25 MHz Motorola 68040 beat a 50 MHz 486 Windows PC in two tests out of three. And was about 33 percent faster overall.

No surprise, really. Macintosh and its graphical user interface were designed from the start around the 68000's true 32-bit architecture. Naturally, it outperforms a computer powered by an extended 8-bit architecture running a character-based operating system with a tacked-on GUI.

That's especially true when the Macintosh is powered by a 68040. With two on-chip caches and an internal 50 MHz clock, the 68040 outruns everything in its class. And even faster versions are on the way.

So if you're in the market for a high performance graphical computer, there's only one way to go.

Go Macintosh
Quadra. Go 040.
Or go slower.



MOTOROLA

© 1991 Motorola, Inc. All other brand or performance indicators by ® or TM are registered trademarks or trademarks of their respective holders. © 1991 Motorola, Inc. All rights reserved.

EDITORIAL

Federal case

"A billion here, a billion there, and pretty soon you're talking about real money."

Illinois Sen. Everett M. Dirksen
(1896-1969)

When you count your blessings, include the fact that you're not in federal government IS. Cost overruns are just one of the balloons the U.S. General Accounting Office (GAO) has been poking pins at in the average of one report a week it issues criticizing federal agencies for their handling of IS.

The good news is that the government is making some moves to get its IS act together. Our profile of the Patent Office's Tom Giammo (CW, April 6) shows how innovative managers are breaking the mold and getting things done. The bad news is that the federal government is swimming against the tide of years of entrenched bureaucracy. No one has all the answers, but a few threads run through most of the examples.

Grand design — Federal IS operations have taken a lot of heat over the megaproject strategies they pursued during the '70s and '80s. That thinking led to fiascos like the Federal Aviation Administration systems project that was out of date before it was even awarded and a Navy programming project that is already 10 years behind schedule. Grand design is not a bad concept, but applying it to hardware and software design is like planning what clothes you're going to wear in 1995. Everything's going to change.

Long procurement cycles — Federal purchasing is so hampered by cover-your-rear thinking that by the time bidders deliver their goods, the specifications are out of date. The Air Force's Desktop III spec ran over 1,000 pages and covered PC technology that would be obsolete in six months. The obvious solution is to rewrite procurements to emphasize goals rather than specific technologies. The Air Force tried that with Desktop IV only to later scrap the award because so many bidders protested.

Complicated appeals — The loser in a bid award can protest to multiple bodies, including the General Service Administration, the GAO and the courts. Because so many losers do appeal, the bidding process can stretch on interminably. An appeals process is necessary, but not one that renders contract specifications obsolete.

Lack of skills — Good employees are hard to find, especially in Washington, D.C., where civil service salaries and turnover keeps things in a state of flux. The Department of Commerce's "Trail Boss" program is showing promise for putting projects under the control of skilled technology evangelists. It should be expanded.

Sen. Dirksen's wry quote expresses what's been wrong with Washington for a long time. It would be good to see federal IS departments leading the move to fix it.

Paul Gillin
Paul Gillin, Executive editor



LETTERS TO THE EDITOR

Victimized by failing PC clone syndrome

The article "OS updates shut down some clones" (CW, May 4) was of special interest to me because I have been anxiously awaiting an article like that for the past few years.

I work in a department that uses SCO Xenix/386 running on various makes of 386-based PCs. We quite often run into cases where a PC will fail when running Xenix — with solid, repeatable symptoms — but no DOS-based test can find any faults.

I have tried calling diagnostic software companies to ask if they have any tests that run in

386 mode but have yet to find anyone who even understands why I might need one. I called Intel and The Santa Cruz Operations' support offices a few times, but they weren't any help, either.

The only hope I had was that one day when Windows and OS/2 started making fuller use of 386 mode and reaching a wide enough audience, then they would start running into the same types of PC faults that Xenix was finding.

I guess that day has finally come.

Leroy Erickson
Unisys Corp.
St. Paul, Minn.

Offshore success

"Kiss U.S. coders good-bye" (CW, April 6) was a timely article describing the kind of international alliances that International Business Systems, Inc. has been successful with. As usual, the dissenters base their opinions on extremes rather than reality. Capable developers in most countries speak good English, and there is no reason to assume that no face-to-face contact ever takes place just because coding is performed offshore. In many cases, the other phases of the product life cycle are performed on site.

The area for savings can certainly surpass 15% and may surpass 25% when price, quality and productivity are combined. I appreciated the opinions that were positive and forward-thinking on this subject. To one and all I say, not only can it work successfully, but it already is working successfully!

Ed Zimmerman
International Business
Systems, Inc.
Englewood Cliffs, N.J.

All U.S. workers do not look the same

I was disturbed by the tone of J. Benedetto's letter (CW, April 27) replying to Edward Yourdon's "Kiss U.S. coders good-bye." In citing one example of a bad non-American programmer, he wrote, "American business is for American workers." Will he trash my resume because I have a non-American name?

In another letter in the same issue, James Rotter talked of the problems that language and cultural differences present. The market will take care of language. Cultural differences? Is an appreciation of NFL games a prerequisite for C programming?

I am one of the millions of immigrants who admire the opportunities, tolerance and pluralism of American society. Let's not let a bad economy spoil it.

Jagadison Shinkumar
Software developer/manager
Huntsville, Ala.

Same yardstick

Gary T. Marx ("Let's overshadow on managers," CW, April 20) has a novel concept: that managers should be held accountable for their time and (un)productivity. In an age where the annual earnings of some executives outpace the lifetime earnings of their employees, Marx's idea suggests that all workers be measured by the same productivity yardstick.

Without closer scrutiny of senior managers, how is it that corporations continue to justify outrageous compensation of CEOs in the face of mounting corporate losses?

Marx writes, "Imagine what could be uncovered if a full audio and visual record of all the job-related behavior of senior executives and managers was available." The next thing you know, stockholders in droves will start demanding that their CEOs be replaced with the company's star data entry clerk!

Lynne Cragg
Seattle

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Lubert, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



Paying again and again for virus protection is enough to make you ill.



Frankly paying anything at all is pretty nauseating.

But that's nothing compared to the feeling you get in your stomach when a drive full of data goes down the drain.

So you pay.

Then you pay again. For upgrades. Or quarterly "updates."

But even that doesn't buy you much peace of mind. Because each new day brings an average of six new viruses into the world.

Which means all anti-virus programs are inherently obsolete.

Except one.

Introducing Untouchable™. The only software in the world that gives you 100% protection.

Today.

And tomorrow.

Like other anti-virus software, Untouchable is equipped with a TSR monitor for patrolling your system memory plus a scanner/remover for examining the files on your disk.

Between them, these first two lines of defense can

know that Untouchable is equipped with a unique *third* line of defense, which has been mathematically proven to be, well, untouchable.

Instead of looking for viruses, this third line of defense looks for *changes in your executable and system files*.

If the change is but a single byte, Untouchable will spot it and, using our patent-pending recovery technique, reconstruct the file to its original state.

The process is known as Generic Differential Detection, and certain other programs claim to perform it, too.

But only Untouchable calculates file signatures using not one, but two proprietary algorithms that can't be reverse-engineered.

Only Untouchable guarantees 100% safe recovery of infected files. (Unlike other programs that proudly generate corrupted files, Untouchable knows when the jig is up and doesn't attempt recovery.)

Only Untouchable can provide centralized network virus protection. In fact, Untouchable Network has enough virus alerts and reporting mechanisms to settle the stomach of even the most nervous Netware® administrator.

And only Untouchable is backed by our vaunted 24-hour toll-free technical support and a one-year money-back guarantee.

If you're worried about viruses — and you should be — don't reach for the Mailbox® Reach for the phone.

Dial 1-800-926-4289 Ext. 55.

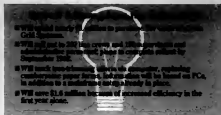
You'll feel better right away.



7TH GENERATION SYSTEMS, INC.

DESKTOP COMPUTING

PCs AND SOFTWARE • WORKSTATIONS



Utility to save \$1.6M with pen computing plan

Tree-trimming crews to run more efficiently

BY MICHAEL FITZGERALD
OF STAFF

DETROIT — Trees pushed Detroit Edison Co. to buy pen computers.

The utility pumps electricity to 1.9 million customers spread out over 7,600 square miles of Michigan. Many of those miles have borders of trees that limit, left untrimmed, can fall and hit power lines.

Detroit Edison wanted to better manage its 267 crews of tree trimmers, and, after investigating the alternatives, decided pen computers offered the company a way to do it. It recently purchased 367 GridPads from Grid Systems Corp. and estimated it will save \$1.6 million — more than the purchase cost — in the first year of use.

Detroit Edison's pen project presents an archetype for what pen-based computing observers have said will characterize early adopters of these types of systems: Its workers are mobile, previously unautomated and intensive users of forms.

"Our previous system used paper for everything," said John Carretti, assistant forestry specialist at Detroit Edison's line

clearance central staff.

A pen system "lets us manage information better because it lets us track all the days we worked on trees, which crew did it, the growth rate of trees [and] which crews worked where. So we know a lot more about what we're getting into when we go into an area."

Carretti said this information was previously tracked by paper, "but the reporting was a lot more cumbersome." He said moving to the GridPads lets Detroit Edison be more flexible and much more responsive than it was before. The utility used to feed data into a mainframe, which churned out massive reports.

Fast response

Now, a personal computer-based database will also get the tree-trimming information, allowing much quicker turnaround on specific requests. Detroit Edison developed its application in-house, using Nantucket Corp.'s Clipper 5.0 and Fremont, California-based R2Z, Inc.'s PadBase + development tools.

Detroit Edison said it expects to save some \$750,000 simply by improving the efficiency of its

Compaq Computer Corp. and IBM cannot beat the close marketers at their own price points, but the two hardware giants are aiming to come close. Moreover, they are banking on something new to entice users to pay a 5% to 10% premium: support from the vendor.

Some of IBM's corporate users, however, said they see IBM's new HelpWare program as more of an aid for home users or small businesses rather than a tool for the corporate market.

"HelpWare? I don't understand that one. To me, it adds a lot more fat and overhead than it would be worth," said Charles Darnell, chief information officer at Conyers, Co.-based Lithonia Lighting, a division of National Service Industries, Inc.

Darnell said he could see it being more of an attraction for users with less resources at their disposal.

No need for frills

Jim Lough, a supervisor at the user help center at Kemper Insurance Co., agreed, saying that for him, IBM's support really did not need pumping up.

foremen through reduced paper-work.

The pen-based system has also condensed payment to contractors — Detroit Edison contracts its tree-trimming needs to independent companies — from 35 to 45 days to less than four days. Detroit Edison said it expects to save \$900,000 from contractors removing a 4% fee they charge Edison to cover floating loan costs.

Carretti said GridPads were

"We haven't really taken advantage of it," Lough said, adding that his company did not have a problem with IBM's service and support in the first place. "In fact, that's one of the reasons we stuck with them — the technical expertise they all have."

For Compaq users, any support at all is a step forward. Charlene Avey, network administrator for the engineering department at the Indianapolis Water Co., said she was quite impressed with her encounter with Compaq's technical support.

Avey had called Compaq looking for a part that would help her add a disk array to her machine, which she wanted to use as a network server. The part was not yet available, she said, but Compaq made her one and sent it to her within a week.

Now, "I'll call their 800 number rather than the local representative whenever I have a question on new stuff," she said. "I was really impressed."

Both companies' restructuring in the past year have resulted in strong new emphasis on

phone-in support, an area in which fast-growing personal computer manufacturers such as Dell Computer Corp. have built a strong reputation.

Previously, the two primarily relied on their network of dealers to provide support for desktop machines.

Until March of last year, Compaq did not even have a number at which users could contact the firm's Houston-based headquarters.

Since then, the company's new technical support center that currently numbers about 100 people, a figure that Gus Tolos, vice president of service and support at Compaq, said he could see increasing by 50% in the next six months.

"The key is to make sure that service and support are more accessible," he said. "Some of our capabilities are well-kept secrets. We need to make ourselves more visible."

The company announced the CompaqCare support program this month as part of that effort, Tolos said. Highlights of

Continued on page 36

chosen because the other pen-based systems that Detroit Edison evaluated used an Intel Corp. 80386SX-class processor, which offered only four to six hours of battery life.

Carretti said the 80C86-compatible GridPad gets eight hours of battery life, which is essential because the crews spend their day out in the woods, away from their trucks. When the workday lasts longer than the battery, employees use an adaptor that

plugs into their trucks' cigarette lighter.

Detroit Edison is purchasing a dozen Grid desktop PCs based on Intel's 20-MHz 1488SX chip, with 120M- or 200M-byte hard disks built in and an external flash-card reader. These PCs will be used to manage the flow of tree-trimming information from the GridPads, and they will be used to send the data to a central mainframe and to tailor custom reports.

XDB-Link. The SQL Connection to DB2.



1-800-488-4948

XDB

BOARD WATCH

Chris Lindquist

Catty
chatting

The bombast and rhetoric about Windows vs. OS/2 have been flying hot and heavy on the bulletin boards — so hot on some that the sysops and moderators have banned such discussions. As a result, the number of cheap shots has diminished. And many users seem too busy getting their freshly unwrapped software running to be on the offensive.

But while some IS departments are still sitting out the

storm, lots of users on both sides of the fence seem to think the war is already over. Just who won depends on whom you ask.

Discontent with IBM's effort on OS/2 2.0's behalf continues. On Usenet, a terse message calling for the firing of the IBM marketing manager for OS/2 2.0 was greeted with a response of "You mean there is one?"

One user excused the lack of marketing in a manner IBM would probably rather not hear. His claim was that OS/2 2.0 simply is not ready for mass-market users yet and that IBM is intentionally waiting a while for the media blitz.

"If IBM mass marketed OS/2 2.0 in its current form, they would be killing their reputation."

Predictions on the boards are

that the June/July ship of an OS/2 2.0 bug fix should solve most of the problems being encountered by users. Common bugs reported included lack of support for a variety of SCSI and video controllers and interface problems with the Workplace Shell.

Want to see the list of OS/2 2.0 developers' Type Control Shift-Alt-o.

Oh, and another bulletin board user who claimed to have a relative working in IBM research and development said that nearly all of the OS/2 developers are currently performing technical support. Why? They're fighting with a 7,000 phone call backlog.

Meanwhile, Windows 3.1 users are running into some problems of their own. Again, getting driver updates, such as those for mice and video adapters, can be a slow process.

Some heavy communications users are reporting nagging difficulties with Windows 3.1's communications support. Seems that despite the improvements made since 3.0, users still lose data and have trouble establishing high-speed connections.

And a developer for a popular communications package told me that while 3.1 is better for communications, if you're serious about needing to multitask while attached to remote systems at high speed, go for OS/2 2.0.

One possible solution being reported, if you must use Windows 3.1, is to buy Berkeley, Calif.-based Bio-Engineering Research Laboratories' Turbo-communications driver to replace the one shipped with Windows.

Lindquist is a Computerworld staff writer.

DOS proves
fine for
1-2-3 userBY ROSEMARY HAMILTON
CW STAFF

The latest and greatest technology is not always the answer for everyone.

When Daniel Saint, a finance specialist at Chrysler Corp., tried out Lotus Development Corp.'s 1-2-3 for Windows last year, he said no thanks and went back to his DOS spreadsheet.

"I found 1-2-3 for Windows too overwhelming [there was] too much stuff on the screen," said Saint, who works in Chrysler's international new venture development group in Highland Park, Mich. "There wasn't a benefit to everything that came with it."

A winner

Back in the DOS world, Saint worked both with the lower end spreadsheet, Release 2.3, and the more sophisticated version, Release 3.1+, which includes such advanced features as three-dimensional spreadsheets.

Recently, he agreed to beta-test 1-2-3 for DOS Release 3.4. This follow-up release, which was software brings some of the Windows spreadsheet graphics to the DOS platform. Release 2.4, which Lotus officially announced earlier this month, is expected to be available in quantity this week, Lotus said.

"I'd say it's better organized and clearer" than 1-2-3 for Windows, Saint said. "It's what Windows needs to be — there's not all that junk on the screen."

Lotus' 1-2-3 for DOS Release 2.4 includes Lotus SmartIcons, a technology included in the Windows spreadsheet that the company is also adding to its entire set of applications. The SmartIcons allow users to click on a graphical representation of commonly used commands or functions to perform the task.

Saint said the Help system in Release 2.4 is also a big improvement over other spreadsheet Help systems, which he said are "hard to understand."

"You need a manual with you if you use all the capabilities of Lotus, and in my job, I do," Saint added. "The help [in Release 2.4] is more of an on-line manual."

Now Saint is awaiting 1-2-3 for DOS Release 3.4, the follow-on to Release 3.1+, which will have minor graphical capabilities as well as performance boosts. Lotus said it has scheduled a full shipment for Release 3.4. "I go between 3.1 and 2.4," Saint said. "I really need the [2.4 enhancements] in 3.1."

Author throws curve at virus hunters

BY JAMES DALY
CW STAFF

There is a pernicious and difficult new hazard to detect in the world of computer viruses that not only has sent makers of virus alert packages scrambling but may forever change the nature of the detection game.

The so-called Mutation Engine is a novel kind of threat that is actually not a virus, but an object module linked to a piece of viral code.

The Mutation Engine first appeared on bulletin boards a few months ago. Experts said they believe it originated in Eastern Europe and is possibly the work of the same Bulgarian virus creator responsible for creating the Dark Avenger virus. Its appearance varies according to the virus to which it is attached. What makes it particularly ominous, experts said, is the sophisticated way it avoids discovery.

Before a virus can become active it needs to decrypt itself. Ordinarily the code used for this remains constant, allowing the use of standard byte-matching de-

tection techniques. The Mutation Engine, however, uses a special algorithm to generate a different decryption routine each time.

"The result is that no three bytes remain constant from one sample to the next," said Igor Greshat, a senior programmer at McAfee Associates, a developer of antivirus software in Santa Clara, Calif.

Tough to find

In the past, viruses such as Jerusalem or Michelangelo had distinct, single identities that made them easy to detect and control. Not so with the Mutation Engine. Typical virus detection techniques are useless on such mutating viruses.

"Most antivirus software looks for these virus signatures, but there might be a multitude of signatures attached to this engine, and an antivirus application won't know what to look for," said Michel Krone, editor of *Access Magazine*, a publication of the Chicago-based Information Systems Security Association.

Several companies, such as

McAfee and Digital Dispatch, Inc. (DDI) in Lakeside, Minn., have begun to shore up their antivirus software packages before the Mutation Engine hits the U.S. in earnest.

"We disassembled a Mutation Engine, then wrote a code filter that looks through a program to spot a Mutation Engine," said Bill Kenny, a computer guru at DDI who said he tested the company's upcoming Data Physician Plus revision on 80,000

Mutation Engine infections. McAfee officials said their Viruscan package uses a similar method to "sense" the Mutation Engine's algorithm.

Although the Mutation Engine's presence has been felt more widely in Europe than in the U.S., its presence on bulletin boards could easily change that.

"If you have a modem, you can be in the virus business overnight," said William S. McKenney, vice president at McAfee.

Still, developers of antivirus software said they are prepared to head it off.

Wrong drivers could trip up
mouse in non-Windows apps

This is the first in a series of customer tips provided by Microsoft Corp. in response to questions commonly asked of Microsoft support personnel.

Q I have installed Windows 3.1 and my MS-DOS mouse driver, yet my non-Windows applications will only use the mouse while running full-screen. What can I do?

A Here are two things to check:

1. The MS-DOS mouse driver you are using might not support the use of a mouse pointer for non-Windows applications running in a window. If you have a Microsoft mouse, check to see if you have Version 6.2 of the MS-DOS mouse driver MOUSE.SYS and MOUSE.COM. If you have a Logitech mouse, use the LMOUSE.COM driver. These drivers are provided with Win-

dows 3.1 and support the use of a mouse pointer for a non-Windows application running in a window. If you have something other than a Microsoft mouse, check with your mouse manufacturer for an updated driver.

2. You might be using a display driver that does not support the use of a mouse pointer for a non-Windows application. All the video drivers shipped with Windows 3.1 support

this feature. If you are using a 16-color, 800- by 600-pixel video driver from the Windows 3.0 Supplemental Driver Library, then try using the generic Super VGA driver included with Windows 3.1 instead. If you are using a display driver that was provided with your computer, you may need to update the driver. To get an updated display driver, check the drivers available on the Microsoft Download Service by modem at (800) 936-6735, or contact your display manufacturer.



Compaq, IBM bank on service

CONTINUED FROM PAGE 35

program include a free, limited one-year on-site warranty service, a new technical forum on CompuServe, increased end-user training and a support staff that uses an artificial intelligence system to help solve problems.

IBM has buttressed its dealer service with HelpWare, a massive support initiative that encompasses leasing and training as well as standard support. The chief component of the program is the HelpCenter, a toll-free call-

in center that can help users through IBM's byzantine organization and can also provide technical support in a safety net capacity.

James Cannavino, vice president and general manager at IBM's Personal System Group, said the response has been very positive: The system was bogged down with questions when the company announced its latest version of the OS/2 operating system.



The new HP PaintJet XL300 lets you make a splash without getting soaked.

At last. A printer with fantastic color and a brilliantly low price. \$3,495.

Vivid color has never been so affordable. Hewlett-Packard introduces the PaintJet XL300 inkjet printer. Now you can add a 300 dpi color printer to your system for the remarkably low price of just \$3,495.*

The PaintJet XL300 has HP LaserJet printer compatibility built right in. The same typefaces. The same page formatting. It also has PC/Macintosh auto-switching, so users in a mixed environment can share. And, just like a LaserJet, the PaintJet XL300 becomes network-ready with optional HP JetDirect interface cards.

Get laser-quality text and graphics

on a choice of media that includes plain paper and transparencies. Or add optional Adobe® PostScript® for access to even more graphics applications.

Now that there's a printer as practical as the PaintJet XL300, maybe it's time you took the plunge into color. Call 1-800-752-0900, Ext. 3159 for a free print sample and the name of the authorized HP dealer nearest you.†



©1990 Hewlett-Packard Company. *Suggested U.S. list price. Additional features and options available. †See your HP dealer. HP is a registered trademark of Hewlett-Packard Company. Adobe and PostScript are registered trademarks of Adobe Systems, Inc. in the U.S. and other countries. HP ColorJet is a registered trademark of Hewlett-Packard Company.

**hp HEWLETT
PACKARD**

SUPRA

Finally, A Client/Server Solution For Rightsizing... From Desktop

To Data Center.



SUPRA SERVER From CINCOM

To effectively rightsize, you need the same RDBMS server bridging your mainframe and LAN environments, plus mainframe-proven performance on all platforms. Only SUPRA provides all that... and more.

Rightsizing with SUPRA allows you to develop applications on any platform (MVS/ESA, VSE, VAX, UNIX or PC), deploy them to any other platform or connect them in a client/server network.

Find out how rightsizing with SUPRA can help you avoid costly hardware upgrades, increase productivity and maximize your IT budget. Call today for a free rightsizing consultation. 1-800-543-3010.

SUPRA

CINCOM

The Server Solution

All trademarks are trademarks or registered trademarks of their respective owners.

DESKTOP COMPUTING

Linking laptops to television sets

NEW YORK — A product that lets users link their laptop to a television was recently announced by Willow Peripherals.

Willow, a \$2.5 million company that focuses on computer-to-video integration, released Laptop TV, a 2½-pound product that attaches to a portable's display port and feeds a Video Graphics Array image into a standard TV set. Willow has devised an antiflicker technology, ClearView, to improve the TV's reception.

C. Robert Paulson, president of AVP Communication, a video industry consultancy in Westboro, Mass., said the system's price of \$1,195 could make the system attractive to a variety of people who want to use TVs for display purposes but have the more sophisticated, higher resolution computer realm for development. He said other tools on the market were in the \$4,000 to \$5,000 range.

MICHAEL FITZGERALD



Willow Peripherals' Laptop TV allows users to link their laptops to a television.

NEW PRODUCTS

Systems

Facit, Inc. has introduced N1200, an industrial portable personal computer.

Designed for factory-floor applications, N1200 is an IBM-compatible 80286 PC that is self-contained. It has a Color Graphics Adapter display, keyboard, 3½-in. floppy disk drive, optional hard drive and interfaces to numerical control machines, printers and other peripherals. The N1200 can be used for industrial applications as a stand-alone PC or be connected to a local-area network.

The Facit N1200 costs \$3,489 with 512K bytes of memory and no hard drive, and \$4,189 with a 40M-byte hard drive, 2.5M-byte memory and numerical control/distributed editing software.

Facit
University Center
400 Commercial St.
Manchester, N.H. 03108
(603) 647-3700

Software applications packages

Silicon Beach Software, Inc., a subsidiary of Aldus Corp., has started shipping *Alphas Gallery Effects: Volume 1, Classic Art* for Microsoft Corp.'s Windows.

Gallery Effects for Windows automatically transforms scanned photographs and other bitmapped images into painting-like artwork. Sixteen customizable master effects are offered, including charcoal, dry brush, graphic pen, mosaic and watercolor.

The product is priced at \$199.

Silicon Beach Software
Suite J
8770 Carroll Center Road
San Gabriel, Calif. 92126
(619) 695-6956

MySoftware Co. has introduced *My-Quick Writer*, a word processor.

The program offers customizable pre-

written business letters and business letter style guides that include Full block, Semiblock and several others. My-QuickWriter has pull-down menus and editing capabilities that allow users to move or rearrange blocks of text.

My-QuickWriter costs \$24.95 and requires 512K bytes of random-access memory and DOS 2.0 or greater.
MySoftware
Suite 167
1250 El Camino Real
Menlo Park, Calif. 94025
(415) 325-9372

American Training International has introduced *TourGuide*, an interactive authoring software product.

TourGuide users can develop multimedia applications and create media objects such as scenes containing images, pictures, line shapes and text that can be set in motion using animation. A variety of text styles and fonts, graphics tools and patterns are available with *TourGuide* along with a map feature that illustrates all tour routes, including intricate hypercard types of user-controlled tours.

TourGuide is priced at \$2,995.
American Training International
12638 Bentrice St.
Los Angeles, Calif. 90066
(310) 823-1129

Peripherals

Mouse Systems Corp. has introduced *NewPoint*, a miniature trackball for portable computing.

NewPoint has a 200 counts-per-inch (CPI) base resolution, is adjustable via Silicone Systems' bundled ballistics driver software from 20 to 6,400 CPI and supports Microsoft Corp.'s protocol. *NewPoint* can be used with any IBM XT, AT or Personal System/2 compatible. It requires DOS 3.3 or higher, 256K bytes of random-access memory, a RS-232C port and a 3½-in. disk drive.

The *NewPoint* miniature trackball

Pen start-up lands retailer

BY MICHAEL FITZGERALD
OF STAFF

SALEM, Mass. — A little-known pen-based start-up has converted its first customer: Rich's Department Stores, Inc. is the first user of WriteAway, a new product from fledgling Arthur Dent Associates, Inc. in Tewksbury, Mass.

WriteAway allows users of keyboard-based Zeon International Ltd.'s 386+ notebooks to run pen software.

Howard Brooks, director of MIS at Rich's, said his company picked the Zeon notebook to gain access to WriteAway. "We were looking around for a notebook, and I wanted to work with pen technology because people in the stores don't want to deal with keyboards," Brooks said.

Rich's is switching its 26 stores to universal product code (UPC) labeling on the shelves instead of marking a price on each product. It currently has six Zeon notebooks, which use WriteAway and have a bar code reader attached, to serve as a UPC audit device.

"It's a necessary thing — we've got to get the stuff into the systems, and it beats by a long shot people running around with pencils and paper and writing [information] down," Brooks said. "We're trying to help them get more work done using computers."

Brooks said Rich's will put two notebooks in each of its stores and build a planogram — the plan for laying out a store — and order-entry applications for use in the stores. Rich's will use Gupta Technologies, Inc.'s SQLWindows product to write the applications, as it did with its UPC audit application. Brooks said developing software for Windows for Pen Computing, Microsoft Corp.'s pen environment, had proved relatively trouble-free.

Brooks also said the Zeon notebooks connect readily with Rich's LAN Manager 2.1 network. The company's corporate information systems are based on Hewlett-Packard Co. 3000/950 and 3000/948 minicomputers.

costs \$129.95.

Mouse Systems
3505 Seabreeze Drive
Fremont, Calif. 94538
(415) 656-1117

Power supplies

Falcon Electric Co. has expanded its Falcon UPS Plus L Series with two new models: 400-VA UPS400VA-1L and 800-VA UPS800VA-1L.

The units are uninterruptible voltage sources (UPS) designed for microprocessor- and microcontroller-based equipment in engineering, manufacturing and computing environments. According to the company, UPS Plus prevents daily power disturbances such as brownouts, sags, spikes, surges and noise from reaching sensitive equipment.

UPS400VA-1L is priced at \$890 and UPS800VA-1L at \$1,090.
Falcon Electric
320 W. Clary Ave.
San Gabriel, Calif. 91776
(818) 287-6116

THE IDEAL COMPUTER SYSTEM. DEFINED.

Open VMS™ is the definition of oo-compromise computing. No compromise in that you get everything you want in a system without having to make sacrifices.

Price & Performance

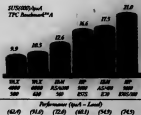
Open VMS has always been known for its versa-

tility, its dependability and its rich functionality. But what about speed? Well, the performance of Open VMS actually exceeds the fastest RISC systems.

The power and speed of Open VMS put it ahead of our selling line.

That's based on real-life applications using standard audited benchmarks. And this performance doesn't come at a high cost. In fact, using the same audited benchmarks,

Open VMS price/performance beats over RISC.



Open VMS delivers better price/performance than even the

OPEN VMS.

fastest RISC UNIX™ systems from IBM™ and HP™.

Functionality

Open VMS is the most functional computer available today. It has the easiest-to-use software, the best development tools, and over 10,000 applications. It can easily grow from desktops to datacenters networked globally. And it's the best at protecting your data and making sure it's always there. All of which is why over 10 million people today rely on Open VMS for their business-critical applications.

Openness

Open VMS is what its name implies - open. Because built right into it is the most comprehensive set of industry interface standards, our Network Application Support (NAS) software. This enables multi-vendor computing

with all popular desktops, all popular large systems, and all popular databases.

Tomorrow

Open VMS is the ideal system for running your business today, and it leads the way to the future. Since it is so open, Open VMS gives you a clear path to Alpha, the computing architecture of the 21st century. With today's Alpha-ready Open VMS systems, you can enjoy the best solution today, and you can easily add in the best architecture tomorrow.



Entering Open VMS into the 21st Century.

Support

Since Open VMS is from Digital, it's backed by a worldwide service organization of 40,000 people and one of the top three system integrators in the world. And with our open services, we support more than 10,000 products from more than 1,000 vendors as if they were our own products.

Performance, price, functionality, openness, the best path to the future, and support - oo-compromise computing defined.

For more information on Open VMS, contact your local Digital office.

DIGITAL. THE OPEN ADVANTAGE.

© 1992 DIGITAL EQUIPMENT CORPORATION. THE DIGITAL, ALPHA, VAX AND VMS ARE TRADEMARKS OF DIGITAL EQUIPMENT CORPORATION. THE HP 9000 AND HP VMS ARE REGISTERED TRADEMARKS OF HEWLETT-PACKARD COMPANY. IBM, POWERPC AND POWERPC ARE REGISTERED TRADEMARKS OF INTERNATIONAL BUSINESS MACHINES CORPORATION. SUN IS A REGISTERED TRADEMARK OF SUN MICROSYSTEMS, INC. DEC AND DEC VAX ARE TRADEMARKS OF DIGITAL EQUIPMENT CORPORATION. THE SPECint800 AND SPECint800/MB ARE TRADEMARKS OF THE PERFORMANCE EVALUATION CENTER, HERE, THE MICROVAX IS A SUN, SYSTEM 11 IS COMPAQ AND SO FORTH.



OS/2

*Starting today, everything
your computer has ever
done, it will do better...*

*now for as low as \$49!**

Order OS/2 2.0 today!
Call 1-800-3-IBM-OS2



IBM

Or order your OS/2® 2.0 operating system just by completing this postpaid card! (Only credit card orders, please—do not send check or money order)

Name _____

Title _____

Company & Dept. _____

Address _____

City _____ State _____ ZIP _____

Office Phone () _____ Home () _____

Credit Card # _____ Exp. Date _____

☐ American Express ☐ MasterCard ☐ VISA®

Signature _____

What industry are you in? _____

What computer do you use? _____

What size is your A, desktop drive? (Circle one) 3.5" \$ 25" _____

Do you use Windows™ (Circle one) Yes No _____

Check the package(s) you wish to order:

☐ Windows server! Special promotional price—\$49! Quantity _____

☐ DOS server! Order OS/2 2.0 for just \$99! Quantity _____

☐ Need a home operating system? Full package \$139! Quantity _____

Above prices do not include applicable sales tax or \$5 shipping and handling cost per package ordered.

To run OS/2 2.0:

■ You must have a 386 SX processor or higher

■ You must have at least 4 megabytes of RAM

■ You must have at least 30 megabytes of available unused disk space on your hard drive

* Windows sales only. Proof of Windows purchase and fee required. Follow the instructions for

installing, general and technical. See accompanying OS/2 2.0 package. If we don't receive your proof

of purchase within 30 days, we will have to charge your credit card an additional \$55. Price for

OS/2 server \$99. Full package base operating system \$139.

Offers valid in U.S.A. only, subject to IBM.

Please do not staple or fold. Easy response card and return.

AC090701



NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NUMBER 201 DEARBORN MI

POSTAGE WILL BE PAID BY ADDRESSEE

International Business Machines Corporation
P.O. Box 525
Dearborn, MI 48121-9864



Starting today, everything your computer has ever done, it will do better.

If you thought you knew what OS/2® was all about, think again. This is 32-bit OS/2 2.0, and it's more than a promise. It's a breakthrough. An operating system that takes your DOS, Windows® and OS/2 applications beyond the limitations of the past—lets you do more with them than you ever could with DOS, DOS with Windows and OS/2 1.3.

It also runs multiple DOS, Windows and OS/2 applications at the same time, regardless of version, in separate windows on the same screen—seamlessly. In other words, true multitasking. And with OS/2 Crash Protection®, each running application is protected from the next, so if one goes down it won't affect the others.

About the only thing better than how much more OS/2 can do, is how easily it does it all. There's a graphical interface that makes OS/2 easy to install, learn and use—the Workplace Shell®. And OS/2 comes with HelpWare®, a collection of services and support, including a toll-free number. But maybe the best part is that instead of buying DOS, Windows and Adobe Type Manager®, you get them all with OS/2. So for a whole lot less, OS/2 2.0 gives you a whole lot more.

With OS/2, your software can catch up with your hardware. And you can do the only thing you haven't been able to do with your computer. Make the most of it. For an IBM authorized dealer near you, or to order OS/2 2.0—at special introductory prices of \$49 for Windows users and \$99 from any DOS—call 1 800 3-IBM-OS2®.



Introducing OS/2 2.0.

- Runs DOS, Windows and OS/2 applications from a single system.
- Workplace Shell: an easy-to-use, graphical interface.
- Up to 48MB expanded memory per application. No 640K limit.
- Makes the most of 386 SX hardware and above.
- Upgrade from Windows to OS/2 2.0 for \$49; \$99 from any DOS**

IBM®

A better way to increase workgroup productivity is just around the corner.

Contact a VAR near you for the Lotus Notes® solution for your company.

ARIZONA

Neckman Computer Group, Inc.
602-249-1000
Deyan Kravitz, Vice President

CALIFORNIA

Allstate Informatics/Valcom
714-966-2300
David Kinsman
Information Partners
International, Inc.
415-772-0000
Richard Hight
ThyssenSoftware Software Corporation
618-879-2400
Barry Lederman

Distributed Systems Solutions
International (DSSI)
818-991-0200
Ken Norland
Steve Brown

Perman Systems, Inc.
213-646-5500
Dana P. Plummer
Rick Johnson

Integrated Systems Group
805-562-1414
Rick Lando

International Micronet Systems
415-586-1111
Barry Markman

LANSYSTEMS Inc.
619-582-8000
Victoria Mackay

Lynch, Marks & Associates
310-444-2621
Peter K. Smith

Magnolia Group International, Inc.
213-551-5225
Dana Saloner

Marathon Systems

415-364-1500

Doug Vaughn

FLORIDA

PCS Networks
304-655-6300
Richard Linnell
Wynant Olsen & Co.
1-800-367-7881
1-800-367-7881
714-540-5087
Dale Wilson

GEORGIA

Hays Computer Systems, Inc.
904-477-9881
David Hays
MicroAge
407-670-7030
John J. Jern
Monetary-Walsh
813-882-9095
Rick Adams

ILLINOIS

Productivity Software Resources, Inc.
847-985-0865
Doug Brown

INDIANA

WORLDLINK
217-526-9378
Greg Peterson
Group Promotions
800-987-0600
William Atwell

MASSACHUSETTS

Vergara Software
617-821-4300
John Brown
781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

781-251-1111
David L. Smith

MINNESOTA

Connet Computer
612-944-0181
John Thomas

MISSISSIPPI

MicroAge
601-482-1778
David Gaudin

NEW HAMPSHIRE

MicroAge
603-482-1778
David Gaudin

NEW JERSEY

MicroAge
609-987-0600
William Atwell

NEW YORK

MicroAge
914-987-0600
William Atwell

NEW YORK

MicroAge
914-987-0600
William Atwell

NEW YORK

MicroAge
914-987-0600
William Atwell

NEW YORK

MicroAge
914-987-0600
William Atwell

NEW YORK

MicroAge
914-987-0600
William Atwell

NEW YORK

MicroAge
914-987-0600
William Atwell

NEW YORK

MicroAge
914-987-0600
William Atwell

NEW YORK

MicroAge
914-987-0600
William Atwell

NORTH CAROLINA

DLAN
704-339-8058
Robert R. Martin

OHIO

The Future Now
313-771-7110
David Rupp

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

OKLAHOMA

MicroAge
918-272-9855
James Pratt

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey
Software Spectrum
214-646-0000
Bill Collins

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

REPRESENTATIVE

REPRESENTATIVE
770-398-7000
John McVey

Each of the VARs listed on this page have been trained and certified by Lotus Development Corporation. Call the one nearest you for more information. They're ready to help you take advantage of a new and better way to work together. Outside North America, please call or fax Lotus Notes International Marketing: Telephone: INT+(44) 784 455415 Fax: INT+(44) 784 468344.

Lotus Notes Certified VARs.

(If you're interested in becoming a Notes certified VAR in North America, please call 1-800-343-5414, Dept. N574.)

© 1992 Lotus Development Corporation. All rights reserved. Lotus Notes is a registered trademark of Lotus Development Corporation.

WORKGROUP COMPUTING

LANs • SERVERS • SOFTWARE FOR GROUPS

U.S. agency cultivates pockets of computing around the globe

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The Foreign Agricultural Service (FAS) faces challenges to distributed computing that would give many information systems managers nightmares: It has 90 offices around the world, all are dependent on IS but have no local technical staff, and many are located in Third World countries far from spare parts and maintenance services.

But that is not deterring the agency of the U.S. Department of Agriculture from a \$5.5 million project to install Wang Laboratories, Inc. personal computers and Banyan Systems, Inc. local-area networks at its far-flung sites. The agency hopes to end up with more reliable systems under its own control and to improve the sharing of data and resources in its offices.

The mission of the FAS is to boost exports of U.S. agricultural products — now at \$40 billion annually — and to track overseas sales and sales opportunities. Information about supply and demand is sent from the FAS' foreign offices via electronic mail to a forecasting system here that is a key determinant of commodities futures prices.

The FAS shares space at U.S. embassies with the U.S. Department of State and, until recently, it also shared the State Department's Wang VS minicomputers. The FAS accessed the mini-

computers via dumb terminals and also used old stand-alone Wang PCs. The FAS has just completed the first phase of its project, which was to move its office automation applications off the minicomputers and to place 33-MHz, 80386-based Wang PCs on the desks of all 450 employees overseas.

The key objective in Phase 1 was to upgrade hardware in a

way that would be virtually transparent to users, said Philip C. White, director of the FAS' Information Systems Management Division. "A large number of our staff are foreign nationals. We wanted to give them a new box but not scare them off," he said.

The PCs have modems through which E-mail and file

transfers can be sent to the U.S. via local Postal Telephone and Telegraph authorities and Sprint Corp.'s SprintMail.

World networks

In Phase 2, now about one-quarter complete, the FAS is setting up Banyan LANs running the Vines operating system at 75 of its 90 embassies and at headquarters here. Wang's PC 380/33C boxes are being used as both clients and servers.

"We are doing this so we can use a client as a server if the server goes down," White said.

"Maintainability is an incredibly difficult issue because of some of

the remote locations."

Because the FAS' overseas personnel are nontechnical — most are agricultural economists

— the FAS wrote a piece of software it calls LAN Manager, or LAN Man (not related to the Microsoft Corp. product). After the LAN server and connections are installed, usually over a weekend, LAN Man is run on each previously stand-alone PC. It automatically moves data files and infrequently used applications to the server, leaving most executable code on the client.

LAN Man is also used after LAN installation to automate

Continued on page 64

ON SITE

Foreign Agricultural
Service
Washington, D.C.



• **Challenges:** To add computing power for staff stationed at U.S. embassies throughout the world without adding local technical personnel.

• **Technology:** Wang PCs on Banyan Vines networks and an in-house written software package called LAN Manager.

• **Expected results:** Greater system reliability; improved sharing of data and resources.

CW Chart: Tom Monahan

BY JIM NASH
CW STAFF

Network managers are looking beyond some flaws in Brightwork Development, Inc.'s new LAN Server Watch monitoring software to offer praise instead. Server Watch, slated to ship this month, will monitor Novell, Inc. NetWare 3.X networks.

Although Server Watch is billed as a tool for monitoring NetWare 3.X networks, managers using beta-test versions of the product said its capabilities at that level are limited.

Brightwork reportedly is waiting for Novell to publish application programming interfaces for NetWare 3.X rather than write its own and risk incompatibility with interfaces Novell might publish for NetWare Version 3.11 or 3.2.

The software differentiates itself from other network monitors, said Mike Nesbarger, net-

work engineer at the University of Oregon's computing center in Eugene, in its support for Microsoft Corp.'s Windows. That support enables a manager to run Server Watch as a Windows application in the background, watching for and reporting errors, file server disk use, network traffic and other conditions.

Nesbarger said he received an early version of the software two months ago. He applauded its graphical display of key network conditions. There are few or graphics available for NetWare 3.X, he explained. There is a checklist of common problems for each NetWare version that can help novices with problem solving.

A few drawbacks

However, newcomers to network management might be put off by the documentation, which is confusing, said a network engi-

neer whose company policy prohibits his being identified.

"It's a very immature product now, but it's a good start," the source said of his beta-test version. "It did everything it was advertised to do."

The source noted that he had trouble manually overriding alert thresholds partly because of clumsily written documentation. He said the Tinton Falls, N.J.-based company should easily be able to clear up manuals before the product ships later this month.

However, he, too, praised Brightwork's efforts at simply displaying information, such as the percentage of disk space occupied in a server.

The software will list for \$695 for each server license. It can monitor a maximum of 100 servers simultaneously. Licenses for servers with more than 100 users will list for \$1,495.

Managers look at bright side of monitor

BY THE END OF THIS WEEK

By the end of this week Computerworld readers will have spent over \$32.7 Billion on Information Technology this year — representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD

Agency grows global computing

CONTINUED FROM PAGE 43

and simplify system housekeeping associated with maintenance and the adding and deleting of accounts.

"We're in a unique environment, overseas with no technical people," said Gary

fied traffic. That will allow interactive communications, including access to the FAS databases in Washington, D.C.

"Users might want to get trade statistics not available locally," Tharr said.

According to White, one of the reasons the FAS chose Wang was because the FAS is one of five agencies authorized to order from an \$841 million, 11-year contract signed by Wang and the State Department in 1990.

He also said the ability to ride the coattails of the huge agency gave the FAS good leverage with the vendor.

It also presented an opportunity at the FAS headquarters that looked too good to pass up, White said.

Now that Wang has an agreement with IBM by which it can sell RISC System/6000 workstations and servers under the Wang name, the FAS can use the same State Department contract to buy the Unix-based RS/6000s—which conform to federal standards for open systems—to replace its six aging, proprietary Digital Equipment Corp. VAXs.

Agricultural Services' White needed systems that could run at points around the world with little support

Tarr, chief of IS development. "The goal is to hide the complexity of Vines from users."

Currently, the FAS field personnel have asynchronous E-mail links to Washington, D.C. In Phase 3 of the project, the FAS will upgrade its networking topology to X.25 packet switching using a planned State Department network for unclassified

XcelleNet revises Forms

Version 1.2 to ship this month; users applaud new features

BY JIM NASH
CW STAFF

Network managers are applauding revisions made to XcelleNet, Inc.'s RemoteWare Forms software.

The application, which enables managers to develop custom forms and automatically distribute them over a wide-area network, is scheduled to ship this month. Early users of Forms Version 1.2, however, are already talking about expanding installation plans.

Forms works in conjunction with Atlanta-based XcelleNet's RemoteWare Communications Management System and RemoteWare AppliComm. The software provides tools to build and manage dial-up communications as well as custom applications that operate over such networks.

Version 1.2's new features include forms routing, which can pull forms along a defined path of offices. For example, it can move travel expense records from one point of approval to another. The new edition also adds remote access to SQL databases. In the past, remote offices would have to write or call information systems for data in the central database.

"I can tell you that I'm gonna love this," said John Wingate, director of management information and communications systems at Marsh Village Properties, Inc., referring to the remote access to SQL databases.

Wingate said he has worked with Forms since it was a beta-test product in 1989. Now he is preparing to move from the beta-test version of 1.2 to full production throughout the chain's 175 stores in Ohio and Indiana. Marsh Village Properties, based in Indianapolis, is a division of Marsh Supermarkets, Inc.

Productivity will improve throughout the chain, for example, when store man-

agers can send a database request about their stores' performance electronically, Wingate said.

The software will be used to maintain productivity at franchised outlets of Mail Boxes Etc., based in San Diego, said Mark Gaydos, telecommunications manager for Mail Boxes and its 1,700 franchises. Gaydos said a large copier vendor is seeking to reduce the number of its service centers nationwide by having customers bring faulty equipment to local Mail Boxes outlets, which will forward the equipment.

Forms flexibility

Gaydos explained that Forms will be used to build a custom form for those transactions and will route them to the appropriate offices. Gaydos and Wingate each said they had looked around for workflow software specific to their industries but found nothing that allowed for the degree of forms development flexibility exhibited by XcelleNet's software. Neither said he could find significant problems with its operation.

"The question to ask is, how productive can you make the [store] manager?" Wingate said. With Forms, store managers save about 16 hours each week by not having to manually draw up end-of-day business reports and ship them to the headquarters. They can complete electronic forms that closely resemble their paper predecessors and post them on their IBM-compatible personal computers. The electronic forms are then automatically loaded into the IBM OS/2-based file server in Indianapolis.

Gaydos cited XcelleNet's support. "It's about the best I've ever received," he said.

Forms runs under OS/2 on the central server and under Microsoft Corp.'s Windows on the remote client.

Now, there's an easy way to take the big step to mainframe EDI



Supply Tech's mainframe EDI software is the best solution for your MVS or DOS/VSE system...and Supply Tech's PC-based EDI software should be your first step

The best place to begin your mainframe EDI implementation is on a PC. Why? Because experienced IS and EDI managers agree: the big challenge of an EDI installation is Organizational—not hardware. Why use mainframe resources to work out organizational issues you can handle on a desktop system? Supply Tech gives you a versatile integrated EDI solution

for both PCs and your mainframes. Start on the desktop and migrate to your MVS or DOS/VSE when the time is right. Make sense? With more than 6,000 EDI installations worldwide, we know how to be sensible about EDI.



Call or write for information on how Supply Tech can fulfill your EDI systems requirements—on PCs or mainframes.

The one name behind more successful EDI installations than any other

1-313-988-4000

1000 Campus Drive • Ann Arbor, Michigan 48106-6700 • U.S.A.
Fax: 1-313-998-0999

FDDI EISA cards debut

Network speeds are increasing, notably with Fiber Distributed Data Interface (FDDI) network cards. This month, SynConnect, Inc. in Saratoga, Calif., announced FDDI Extended Industry Standard Architecture (EISA) cards, which, according to the company, nearly double transfer rates.

The company, which declined to offer a list price for the cards, said the cards moved server packets at 8.5M byte/sec. and client packets at 2.4M byte/sec. Both figures were derived from Novell, Inc.'s Perform 3 benchmark.

In June, SynConnect is scheduled to deliver FDDI EISA network cards for single-attachment, dual-attachment and shielded twisted-pair environments. It also plans to deliver another IBM-proposed standard FDDI card, the FDDI EISA Shielded Twisted Pair Data Distributed Interface. The cards will support Novell, Inc.'s NetWare, Microsoft Corp.'s LAN Manager and The Santa Cruz Operation's implementation of Unix.

AAA-92 IAAI-92

Play a part in the year's most comprehensive AI forum—for science and business. Share, learn from...case histories including Innovative Applications and AI On-Line, practical demonstrations by leading AI hardware/software/service vendors, technical programs and tutorials. Catch up with leading-edge AI research. See the newest in robotics in exhibition.

Related Conference on Artificial Intelligence and Innovative Applications of Artificial Intelligence Conference
Write, call, fax American Association for Artificial Intelligence, 445 Rogers Drive, Menlo Park, CA 94025, phone 415-326-3433, fax 415-321-4657.

July 14 - 16, 1992
San Jose, California



It's really this simple.

**Show me a new workstation
with better numbers, and you'll
get my attention.**

**Show me one with better ideas,
and you'll get my order.**

Introducing SPARCstation 10.

**It's four times more powerful
than anything we've ever made.**

**And a hundred times more interesting than
anything anyone else has ever made.**

You can hardly flip through a computer magazine today without bumping into some vendor's announcement of a new workstation. Yet we all know what's really being announced:

New chip benchmarks. New prices. Maybe a new model number.

Can we interest you in something a little more meaningful?

A powerful new workstation that runs your applications better than any other desktop on earth.

A multiprocessing workstation you can upgrade to future generations of chips about as easily as you can change a light bulb.

An innovative workstation that doesn't trade off backward compatibility for the sake of forward thinking.

If that's your idea of a truly oew workstation, meet the SPARCstation™ 10 system.

The only performance that matters.

One of our engineers describes performance this way: What good is a turbo-powered engine if the car's transmission is sluggish? Or its tires are flat?

His point is that building faster CPUs

makes little difference if the rest of the computer can't keep up.

So for the new SPARCstation 10, Sun™ devised an entirely oew workstation, from the footpads up.

Not only with a faster CPU, but with a faster system bus, faster input/output, faster networking, and built-in multiprocessing.



The faster CPU is our remarkable — and reassuring — oew SuperSPARC™ chip.

Reassuring, because SuperSPARC is binary compatible with previous generations of SPARC®. It runs the Solaris® operating environment, too, so you can use thousands of existing applications.

And remarkable, because SuperSPARC can handle three instructions at once (most others manage only one or two). Imagine what that does for sheer processing speed.

Now here's where things really start cooking:

We teamed all that horsepower with the extra performance of multiprocessing. One megabyte of SuperCache™ memory. A 320-megabyte-per-second peak memory bandwidth. A 10-megabyte-per-second SCSI disk



Multiprocessing
Performance



controller. And a large I/O buffer for faster Ethernet transfers.

Individually, each of these represents a big step forward in computing performance. But together they produce an astonishing leap ahead in application performance.

And to the person whose hands are on the keyboard, that's the only kind that matters.

Growing up vs. growing old.

Though budgets have never been tighter, most workstations are still designed around the belief that you're willing to replace last year's computer just to work with a newer processor.

The SPARCstation 10 was designed around a different philosophy: Make the processor replaceable, not the workstation.

To that end, we put the processor on a small SPARC module that plugs into the motherboard. As faster chips become available, you can upgrade by pulling out the old card and plugging in a new one.

The rest of your investment — memory, storage, accelerators, everything — is left intact.



10 MB/Sec. Disk Input & Output

But don't feel you have to wait around for faster chips. You have the freedom to grow a SPARCstation 10 in plenty of ways right now.

You can start by plugging in a second SPARC module. Since this machine was engineered throughout for symmetric multiprocessing, a second module will nearly double its processing power.



Build-In ISDN Networking

You can also boost its memory to 512 megabytes. And its disk capacity to 26 gigabytes.

There are ports for both parallel and serial devices; connections for thick, thin, or twisted-pair Ethernet; even ISDN connectors for networking over public telephone lines. All built in. Which leaves its four expansion slots available for other functions.

To sum up, we hope you like the way Sun's SPARCstation 10 looks on your desk.

Because it's going to be there quite a while.

The future is not an option.

As innovative as computer companies try to be, they usually can't keep up with what people like you are ready for.

For instance, how long have you been hear-

ing about promising new technologies like multiprocessing? Multimedia? ISDN?

And how many workstations can you name that give you all these capabilities, right out of the box?

There's only one. And you're looking at it.

You've already read how the SPARCstation 10's multiprocessing can speed up the applications you run today. But it also means you can add enough horsepower later to run next-generation software built around multithreading and object management.

Then there's ISDN. It brings the worldwide telephone network directly into the computer — without modems. Which allows applications to make faxing, voicemail, and even video conferencing as natural as printing.

A 16-bit audio chip and external speaker are also included. So applications can use CD-quality sound for e-mail, spoken tutorials, and multimedia presentations.

And there's enough memory, disk space, and bus bandwidth to meet the enormous demands of animation, simulations, and real-time video.

Oh sure, there are plenty of options you can add to this computer.

The future, though, is standard equipment.

Admit it, you're intrigued.

You can't have read this far without feeling at least a twinge of excitement.

Maybe it's for the swift kick-in-the-pants this machine can give to the applications you're already running today.

Or the enthusiastic way it welcomes whatever prototyping new technologies might be around the corner.

Maybe you simply can't help but respect a computer that offers your business a lot more than just MIPS and MFLOPS.

Whatever you think, here's what to do:

Call 1-800-426-5321, ext. 485, for complete information on the SPARCstation 10, or for the name of your authorized Sun reseller or sales representative.

It's the first workstation to combine such powerful numbers with such poetic ideas.


Sun Microsystems
Computer Corporation
© 1989 Sun Microsystems, Inc.

Executive

Finance

Cost of Investment Policy

The Most Comforting Reason Yet to Choose UNIX.

The world's leading information delivery system has arrived on leading-edge UNIX workstations.* Bringing with it the same integrated applications that have made SAS software such an indispensable part of the corporate mainstream. And that's a very comforting thought if you're using or evaluating UNIX.

Manufacturing

Manufacturing Solutions for the 90's
Manufacturing with Other Systems

Marketing

The SAS® System Welcomes UNIX® to the Corporate Mainstream.

A Familiar Name, A Friendly Face

The SAS System helps UNIX do what UNIX does best. It's never been easier to exploit all the price/performance advantages of UNIX...or to connect UNIX with other systems throughout your organization. That's because the SAS System's powerful data access, management, analysis, and presentation tools work the same way on UNIX workstations as they do on host machines.

A menu-driven user interface takes you directly to the SAS System's most popular applications. We've also taken full advantage of UNIX native windowing. Plus, we've added new interactive capabilities for visual data analysis.

Research and Development

And a Risk-Free Offer

Let the SAS System be your link to strategic computing resources throughout your organization. Give us a call now at 919-677-8200 or fax us at 919-677-8123.

We'll rush you a free SAS System executive summary, together with details about a no-risk software evaluation.

The SAS® System. The World's Leading Information Delivery System.



SAS Institute Inc.
Sales and Marketing Division
SAS Campus Drive □ Cary, NC 27513
Phone 919-677-8200 □ Fax 919-677-8123

*From IBM® SBC, Dec, HP and others.

The SAS System runs on mainframes, minicomputers, workstations, and personal computers. SAS is a registered trademark of SAS Institute Inc. UNIX is a registered trademark of AT&T. Copyright © 1989 by SAS Institute Inc. Printed in the USA.

Bumpy road to client/server Unix at CW

Support, training, software snags delay Phase I; conversion running two months behind schedule

BY MARYFRAN JOHNSON
CW staff

This is a series of reports on Computerworld's own migration to new systems.

FRAMINGHAM, Mass. — The thrill of pioneering new publishing software is wearing thin at Computerworld these days, as we approach the end of Phase I in our conversion to Unix-based client/server computing.

We are running two months behind schedule in the five-stage project with the September deadline moved back to December. Several factors are responsible, including delayed hardware shipments of both IBM Personal System/2s and RISC System/6000s, problems with software installation and user training and our own delays in choosing typeface fonts.

But more importantly, the initial hand-holding support we received from Atex, Inc. for its new Workgroup Publishing System has flagged a bit. Other sites such as *Golf Digest* and *Congressional Quarterly* have signed on for Atex's Unix-based publishing software, so Atex resources once focused solely on us must now be shared.

"At first, Atex was putting our installation on their list as critical to the success of the

product. Now we're less critical," said Paul Gillin, executive editor at Computerworld. There is also a shortage of Atex experts versed in both the newspaper production business and the Workgroup Publishing System, which runs under IBM's AIX Unix variant.

The key expert and linchpin of our project's success is Doris Jeffers, manager of technical and customer support at Atex in Billerica, Mass.

"Doris understands our problems and our system better than anyone," said Catherine Capone, Computerworld's chief copy editor. "When I have a problem, I call Doris and she helps me. If she's not there, it's still a problem."

The project has been under way for six months now, but it was only a few weeks ago that a preliminary copy of the Atex documentation arrived, Gagnon added.

Don Hollands, vice president of general publishing at Atex, said he is well aware of the support concerns and is working to provide more skilled technicians. "All of us have learned from this first pilot scheme at Computerworld," he said. "We are still confident we can meet the high demand and level of support needed."

While there are complaints

from the editorial — or end-user

— side of the house, Computerworld's Information Systems Director Linda Nelson takes a broader and more benign view of

thoroughly trained in using the new application. With help from one other copy editor, she is now producing our Computer Careers and Marketplace section

COMPUTERWORLD

Computerworld's client/server conversion involves the following:

- An 8580, five-phase hardware and software installation ending in December 1992 and replacing low DEC PDP-11 minicomputers in a host/terminal environment.
- Two IBM RS/6000 servers as the main processors, with either 32 IBM PS/2 Model 355SL writer workstations or 80386-based PCs as PS/2 Model 90 page-making editor workstations and Ethernet connection to seven Apple Macintoshes for graphics.
- Atex's Unix-based Workgroup Publishing Software on the RS/6000, with the PS/2s running Keyline word processing software and PC Page Makeup editors.

the conversion effort. "From my perspective, Atex has addressed our concerns in a timely fashion," Nelson said. One example she cited was the help Atex provided recently with a customized piece of code needed to solve a software glitch between a file-storing format on the Apple Computer, Inc. Macintosh and the Atex system residing on the RS/6000.

So far, of the eight copy editors, Gagnon is the only one

pages on a PS/2 Model 90 pagemaker workstation. The goal, however, had been to have 50% of the roughly 130-page newspaper produced on the new system by now and 18 workstations installed instead of only two.

"We really need to get more people trained," Gillin said. "Atex is promising to fix that, and we have to take them at their word."

Among the software snafus that had to be resolved was trou-

ble making the "caltout" function in the new application work correctly. A calout is a quote or phrase pulled from the text of an article and highlighted in a separate box for emphasis. After spending days of frustrating effort on the calout command, Gagnon finally solved it with help from an Atex support technician.

These days, even less unexpected problems in trying to "hot link" the graphics produced by Computerworld's seven-machine Macintosh network to the RS/6000 Model 520 server. Although the interface to directly connect the graphics group to the RS/6000 does exist, the IS department is still testing it, Nelson explained. "We don't want to connect the server to the live Mac network, which is a minimal-critical system, until we are fully comfortable with the technology," she noted.

On the positive side, page production is much faster — "when it works right," Gagnon noted. "A simple page can be completed in 15 minutes now, and the process used to take about an hour."

Yet, the slower ramp-up has its upside. "People are concerned that we're just bumping along with two or three pages in live production now, but they forget what a huge conversion effort this is," the chief copy editor pointed out. "I think it's better that we're just bumping along with two or three pages now, while just a few pages are in production. I don't need seven copy editors tearing their hair out the way I've been."

NEW PRODUCTS

Systems

Kington Technology Corp. has announced the availability of memory upgrades for Hewlett-Packard Co.'s Series 9000 workstations and Series 9000 and 3000 servers.

The upgrades are available in configurations ranging from 1M byte to 64M bytes, depending on the workstation or server model.

Pricing starts at \$140 for a 1M-byte upgrade for the HP Series 9000 Model 9000 Model 700R workstation. A 64M-byte upgrade for HP Series 9000 Model 720, 730 or 750 workstations is priced at \$16,000.

Kington Technology
17600 Newhope Ct.
Fountain Valley, Calif.
92708
(714) 435-2600

Modems

Cettin Corp. has introduced SecureModem 1032e, a V.32 call-back security modem.

Designed to protect dial-in networks from unauthorized access, the SecureModem 1032e can support 105 remote users and features full-screen, built-in

menus for security configuration.

SecureModem 1032e uses password verification with one of three security levels: direct connect for immediate host access; predefined callback for callers to a preselected number or for users that are traveling; and user-defined callback for callers to a user-defined number.

Standard communications software is used, and SecureModem 1032e can function in non-callback mode as a regular modem.

SecureModem 1032e costs \$595.

Cettin
10 Blazing Star
Irvine, Calif. 92714
(714) 559-4016

Software applications packages

SoftSolutions Technology Corp. has announced the MicroSol Corp. Windows version of SoftSolutions' document management software.

SoftSolutions for Windows can be integrated with other existing systems and applications, providing transparent ac-

cess to document management within third-party programs. The Windows version can share a central image database with the DOS version of SoftSolutions. Windows Object Linking and Embedding, Dynamic Data Exchange and Clipboard technologies are supported.

SoftSolutions for Windows costs \$495 per file server plus \$295 per additional workstation. A stand-alone version is priced at \$495.

SoftSolutions Technology
ParkView Plaza
625 S. State St.
Orem, Utah 84058
(801) 236-6000

Micro Engineering Solutions, Inc. has launched Version 5.2 of its Solution 3000 computer-aided design software.

Enhancements include a Flow, Drive and Check Machining feature and new tool and material libraries.

Solution 3000 can also calculate the volume and surface area of a surfaced model.

An Initial Graphics Exchange Specification (IGES) translator is also included at no extra charge. Previously, the IGES translator cost extra.

The software supports personal computers as well as work-

stations from Sun Microsystems, Inc. and Silicon Graphics, Inc. Pricing starts at \$3,500. Micro Engineering Solutions
26300 Town Center Drive
Novi, Mich. 48378
(313) 347-9650

Local-area networking hardware

Harris Adcom Corp. has created CoxNet.

CoxNet connects personal computers equipped with a 3270 coaxial board to local-area networks. Versions for Token Ring and Ethernet connections are offered. The PC connected to CoxNet has access to all Novell, Inc. NetWare servers.

The Ethernet version costs \$7,000. The Token Ring version costs \$8,000. Both include a one-year warranty. Harris Adcom
16601 Dallas Pkwy.
Dallas, Texas 75248
(214) 396-3000

Local-area networking software

Independence Technologies, Inc. has enhanced its Iview Sys-

tem Manager software product.

The product monitors and manages hardware and software on local-area networks. New features include enhanced alarm forwarding, distributed management and line management.

Iview handles an unlimited number of networked devices. Currently, support is offered for Sun Microsystems, Inc. workstations, and other platforms to be added.

The product costs \$14,500. Independence Technologies
42705 Lawrence Place
Fremont, Calif. 94538
(510) 435-9000

Utilities

Camdex Corp. has created CertiCopy, a tape duplication software utility.

CertiCopy allows IBM RISC System/6000 users to simultaneously duplicate IBM AIX software, totaling up to eight copies of magnetic tape information. It is compatible with any IBM 7207 or Camdex 4-in. cartridge tape drives connected to an RS/6000 processor.

Single copies cost \$7,500. Camdex Corp.
360 Second Ave.
Westfield, Mass. 02154
(617) 890-6000

Aug. 22, 1991 • Issue of 802.3 protocol. After Coordination is abandoned, signaling the beginning of a new freedom to communicate.

OF COURSE, WITH A TRULY FLEXIBLE SYSTEM, YOU COULD CHANGE PLATFORMS AND KEEP YOUR EXISTING HARDWARE.

Token-ring boards. Either they adapt to change. Or they're history. As it happens, a few are actually making history. Namely IRMAtrac[®] and MacIRMAtrac[™]. The industry's only field-upgradeable boards.

They have the high performance drivers to support virtually any network operating system. And, they let you alter your PC architecture, cabling and speeds without having to buy a new board.

If you change PC architectures, you just flip your existing IRMAtrac board from its ISA/EISA side to its Micro Channel[®] side. (Or vice versa, of course.)

To switch from, say, 4/16 Mbps twisted pair to 4/16 Mbps fiber optic, the only thing you change is your IRMAtrac's snap-on RIM (Ring Interface Module). The same

goes for our Mac[®] board: MacIRMAtrac.

And, as if they weren't already the best value in the marketplace, you can save over 40% off IRMAtrac and MacIRMAtrac by trading in any coax or LAN adapter through the DCA Advantage[™]—our exceptional support and migration program. For full details, just call 1-800-348-DCA-1, ext. 14E*. Because, even though constant change is here to stay, so are our token-ring boards.

THE ONLY TOKEN-RING BOARDS THAT
SURVIVE VIRTUALLY ANY CHANGE—ON
VIRTUALLY ANY NETWORK OPERATING SYSTEM.



THE FREEDOM
TO COMMUNICATE.

DCA

You will receive 40% off the purchase price of a DCA token-ring network board when you trade in any token-ring network board. For full details, call 1-800-348-DCA-1, ext. 14E*. DCA is not responsible for any other offers or programs. ©1991 DCA. All rights reserved. DCA is a registered trademark and product name of DCA Corporation. All other trademarks are the property of their respective owners.

ENTERPRISE NETWORKING

INTERNETWORKING • SERVICES • NET MANAGEMENT

Net management firms look for partners

BY ELISABETH HORWITZ
CW1199

A frenetic game of "choose your partner" is going on in the integrated network management arena. Rather than reinvent the wheel, major players have been aggressively seeking third-party applications to broaden their platforms' multivendor support and functionality.

Still missing, however, is broad industry support of standardized application programming interfaces that would allow users to freely mix and match their favorite network management software with their choice of management platform.

"The point is, none of these

vendors, even IBM, can afford to go it alone in terms of providing application solutions," said David Passmore, a vice president at Gartner Group, Inc. in Stamford, Conn. "The only successful [network management] platforms will be those that win the hearts and minds of ISVs that can develop the right applications."

Jumping on bandwagons
Novell, Inc. upped the ante earlier this year by announcing dozens of third-party supporters for its new NetWare Management System. Hewlett-Packard Co. did the same late last month by announcing, with its new version of OpenView, that the number of third parties supporting the sys-

tem has risen in the past few months from 40-plus to more than 100.

During the last couple of weeks, other vendors have followed suit. Sun Microsystems, Inc. announced Version 2.0 of SunNet Manager, its Simple Network Management Protocol (SNMP)-based network management system, and emphasized the product's ability to deliver full functionality "right out of the box." SunNet Manager has long suffered from a wide-spread industry impression that it is less an end-user product than a framework and a set of programming tools.

Contributing to the plug-and-play aspect of the introduction

was Sun's announcement of 35 additional independent software vendors whose network management applications can run on SunNet Manager.

Perfect timing
IBM's AIX NetView/6000 began shipping the middle of this month, six weeks early. At the same time, IBM announced the first round of third-party support for the SNMP-based network management system.

Tandem Computers, Inc. also announced the availability of NonStop Net/Master, a system that is said to manage both Tandem and IBM networks. Jointly designed by Tandem and Systems Center, Inc., the platform

is said to work with Tandem's Distributed System Management product for managing Tandem computers. Among its features are the following:

- The ability to invoke either IBM's NetView or Systems Center's Net/Master for managing IBM Systems Network Architecture (SNA) installations.
- Systems Center's Network Control Language allows users to generate customized management applications on Tandem Guardian systems.
- Tools for generating automated response to network events.
- Some initial applications geared to Tandem's fault-tolerant environment. For example, software is available to automatically recover services after a system failure, a Tandem spokesman said.

Continued on page 54

Priority for users: Easy way to manage networks

BY ELISABETH HORWITZ
CW1199

FRAMINGHAM, Mass. — Only about 20 of 100 companies recently surveyed by International Data Corp. (IDC) currently use one integrated platform to manage the bulk of their corporate-wide systems and networks.

However, many of the respondents to the research firm's April 1992 survey cited a critical need within their companies for several of the features promoted by integrated network management platforms. Foremost is an easier way to manage a mishmash of multivendor systems and networks.

Complicating the job of network managers is the need to gather management information from proprietary systems installed to manage multiplexers

and modems, as well as local-area network adapters, hubs, routers and operating systems, said Doug Gold, IDC's director of communications research, who wrote the report.

As a result, managers are putting a priority on any tools that will put this "overwhelming amount of information" into an intelligible format, he added. "They want something to tell them what is important and what is not."

Some 72% of users surveyed cited the increasing complexity of network architectures and the inability to efficiently administer those networks as a serious problem. About 55% cited ease of use as a "very critical" network management feature.

Right now, many users are turning to the Simple Network Management Protocol (SNMP)

as the closest thing to a multi-vendor network management solution now available on the market, Gold said. Although SNMP currently lacks critical features, such as security, Gold said, "You give a starving man a crust of bread, and he thinks it's a meal."

Over one-third of the companies surveyed said they are currently using SNMP.

CMIP trails behind
In contrast, 54% of the respondents stated that they did not intend to migrate to the Open Systems Interconnect Common Management Information Protocol (CMIP). One reason for this hesitancy is the lack of available CMIP products, despite the fact that the majority of network and computer vendors have promised support of the standard sometime in the future, Gold said.

One factor that may boost CMIP support is the convergence of a mature version of the Open Software Foundation's Distributed Management Environment

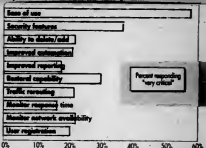
(DME). Gold said. DME promises to provide common interfaces for network management applications, with underlying support for both SNMP and CMIP.

But while users indicated an interest in DME, the standard is several years away from commercial viability, he said.

As average of 15% of the total information systems budget is spent on network management across the sites interviewed, according to IDC. The average expenditure is \$1.3 million per year for managing network domain.

Keep it simple

Users of network management systems say the features that are most important to them are those that make life easier



Source: International Data Corp.

CW Chart Guy Notes

Your enterprise is complex. Your communications solution shouldn't be.



Crystal Point communications software gives you the flexibility you need to connect your enterprise just the way you want.

It's a complete PC-to-host communications solution, providing an efficient, elegant way to solve even the most complex communications problems. And, you're not locked into a single approach or method. It's simply the most advanced communications software available.

The Crystal Point software family offers:

- > TCP/IP, X.25, Async Server support
- > emulations for IBM, HP, DG, DEC, Honeywell
- > multiple file transfer
- > multiple network support
- > DOS, Windows, and OS/2 support

Call (206)487-3656 today to learn about the Crystal Point solution and to receive a FREE white paper on enterprise communications.

Crystal Point

© 1992 Crystal Point, Inc. Crystal Point is a trademark of Crystal Point, Inc.

Before you migrate to think about how



Without the right tools, migrating to a new e-mail system could be very bumpy.

Although downsizing from a host to a LAN-based e-mail system can indeed provide significant long-term savings as well as increased user productivity, it's just not going to happen that way if you have not planned for it carefully.

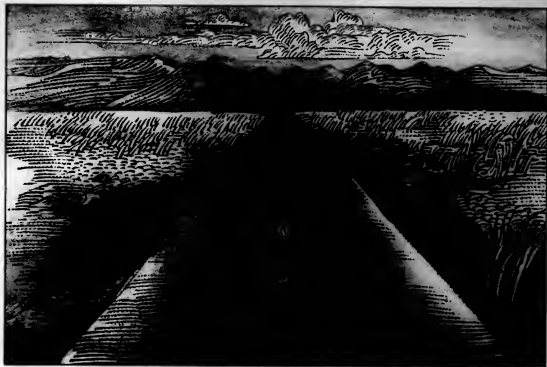
So how do you guard against this? Well, for one, make certain you choose a vendor who can provide a clear migration plan, along with the

understanding that downsizing is a gradual process and not something that'll happen overnight.

Secondly, be sure they are in a position to offer you the right technology to meet your needs.

At Microsoft we're able to do all of this and a lot more. Take for instance our new transport-independent Microsoft Mail Windows[®] client. With it you can move your users to a

a new e-mail system, you'll get there.



Making the switch with Microsoft Mail is guaranteed to provide a smooth ride.

single e-mail interface first, then migrate the back end when it's convenient for you.

Precisely what does all of this mean? Basically that you can move in manageable phases—phases that don't force you to change everything in one fell swoop.

For the details on our 3-phase migration plan, call us at (800) 227-4679, Department Z14, and ask for

the Microsoft Electronic Messaging Strategy white paper and the Migration Solutions paper, too.

And put yourself on the road to a highly successful electronic mail strategy.



Call for your free copy of the Migration Solutions paper.

Microsoft
Making it easier

Vendors look for partners

CONTINUED FROM PAGE 51

The product works with Solve/Connect, which enables NetView/Net/Manager to communicate with NetView in the IBM environment. Pricing starts at \$9,620, and availability is scheduled for August.

Systems Center has had some success selling Net/Manager software to vendors such as Tandem and Fujitsu Ltd., which want more full-function network management for their systems, as well as to companies such as AT&T and Digital Equipment Corp., which want their own network management platforms to be able to manage SNA.

However, Systems Center is also mov-

ing to become an integrated network management system vendor in its own right. A recently introduced product family called Solve, now being market tested in Europe, will provide a range of network management capabilities on either Net/Manager or NetView, according to company spokeswoman Kathleen Janson.

Solve/LAN, introduced recently in the U.S., provides tools for managing local-area networks based on IBM's OS/2 Communications Manager and Microsoft Corp.'s LAN Manager.

On June 8, Systems Center plans to announce several new Solve products, in-

cluding Solve/Change, for managing network changes; Solve/Problem, which formalizes and coordinates problem-solving procedures; and Solve/Configuration, which tracks what is on the physical network, Janson said.

However, Systems Center may be biting off more than it can chew by developing its own application suite for integrated network management, according to Passmore.

"If they are able to take these Solve applications and figure out a way to migrate them to emerging industry standard platforms, [that] would be a good thing. But I'm not convinced people want to run everything on their mainframe and just depend on solutions from Systems Center," Passmore said.

A bouquet of applications

The following is a sample of third-party applications that now run on network management platforms:

For SmNet Manager 2.0:

- Information Presentation Technology's *Apple Agent* allows SmNet Manager to manage Apple Computer, Inc. AppleLink networks.

- DeskTalk Systems, Inc.'s *DataPipe SQL* provides a database management system for storage, reporting and querying of management data. DeskTalk's *Remote Monitoring Service* allows gateway data from Novell LANtrea monitors, which monitor a variety of LAN protocols.

- Triad Systems, Inc.'s *Windows* provides object-oriented management of Unix systems.

- Package from Chipcom Corp., 3Com Corp. and Cabotnet Systems, Inc. allow SmNet Manager to manage the vendors' respective network devices.

For IBM's NetView/6000:

- Synoptics Communications, Inc.'s *Latitude Views* and Chipcom's *OnDemand Network Control System* now run on NetView/6000, enabling the platform to manage Chipcom and Synoptics links.

- Accograph Corp. in El Paso, Texas, is providing applications that enable NetView/6000 to track data centers' cabling, software licensing and hardware configurations.

- Software from Bridgeway Corp. in Redmond, Wash., enables NetView/6000 to manage ASCII and asynchronous devices that do not comply with SNMP.

- Matrix Network Systems is providing IBM's platform with the ability to do LAN monitoring and protocol analysis using the SNMP Remote Network Monitoring protocol.

- In addition, 3Com and Ungermann-Bass, Inc. announced that they would work with IBM to enable NetView/6000 to manage their products via SNMP.

ELIZABETH HENKITT

TO GET THE MOST
OUT OF YOUR IBM
RISC SYSTEM/6000,
YOU HAVE TO BE
ASTUTE. THAT MEANS
BUYING IPL STORAGE.
IPL PROVIDES A
BROAD FAMILY OF
COST-EFFECTIVE
STORAGE SOLUTIONS
TO SATISFY A WIDE
RANGE OF NEEDS -
ALL 100% COMPATIBLE
WITH THE RS/6000
ARCHITECTURE. FROM
OUR OPEN DATASTOR
DESKTOP SERIES TO
OUR OPEN DATASTOR
RACKMOUNT SERIES,
IPL MIRRORS THE
QUALITY AND RELIABILITY YOU EXPECT
FROM IBM. AND ADDS
ALL THE DISK AND
TAPE RANGE, PERFORMANCE AND EASE-OF-USE YOU EXPECT
FROM IPL. WHAT'S
MORE, ALL OF OUR

RS 6000
STORAGE
FOR THOSE
WHO ARE
SMART
ENOUGH TO
WANT IBM.
BUT ASTUTE
ENOUGH TO
BUY IPL.

ipl

IPL. THE BIG NAME IN RISC STORAGE.

SYSTEMS ARE USER
INSTALLABLE.

AND WE SELL OUR
SYSTEMS WITH MORE
THAN JUST WORDS. A
TOP-NOTCH 24-HOUR
TECHNICAL SUPPORT
HOTLINE. WORLDWIDE
SERVICE. PLUS OVER
19 YEARS OF LEAD
IBM EXPERIENCE THAT
MADE US THE LEADER
IN INNOVATIVE AS/400
STORAGE SOLUTIONS.

ALL OF WHICH
MAKES IPL SYSTEMS
THE BEST VALUE FOR
YOUR DOLLAR AND
THE COMPLEMENTARY
STORAGE CHOICE FOR
YOUR IBM RS/6000.
FOR MORE INFORMATION,
PLEASE CALL
1-800-338-8473. IN
MASSACHUSETTS OR
OUTSIDE THE U.S.,
CALL (617) 487-2180.
IT'S THE ASTUTE
THING TO DO.

**HOW TO
SELL USED
EQUIPMENT.**

Advertise in Computerworld's
Classifieds. They work.

800-343-6474
x744

Business plans for the '90s revolve around two hot topics: expansion or restructuring. You may have plans to increase business, to become a key player in a multivendor, global market. Or, you may be considering streamlining your operation through outsourcing, downsizing, or reskilling. No matter what the plan, it will mean a change in the way you view education and training.

Digital's Education and Training Programs have evolved significantly in recent years to serve changing business needs, while maintaining quality traditional offerings, according to Pat Casullo, Vice President of Digital's Education and Consulting Services.

Businesses working in multivendor environments need access to multivendor courses. Work forces need training or retraining on new product lines. Reskilling is becoming ever crucial in today's sluggish economy.

Here, Casullo discusses these trends of the '90s — and the training solutions Digital provides.

Open Education Offerings Meet Multivendor Needs

Technological advances in the workplace have led to changes in the dynamics of Digital's Education and Training Programs. "Our new focus on multivendor support allows you to choose one vendor to manage your complete training needs, regardless of the technology or application," Casullo says.

"More than a year ago, we took an aggressive look at the path that our Open Education services needed to follow," he continues. "We asked ourselves: 'What kind of services do customers want? What are our strengths and what can we provide?'"

Casullo offers this scenario to demonstrate the customer's dilemma when faced with a multivendor architecture: You've got a database, a PC network, and a suite of hardware and software products on the desktop — all from different vendors. How do you make it all work? To whom do you turn to for your training needs?

"Digital is better positioned than anyone to solve this complex customer situation," states Casullo. "Not only do we offer industry-leading proprietary training, but we also offer the broadest range of education and training in non-Digital product areas."

In fact, a glance at the list of offerings at Digital's training centers shows this Open Education philosophy at work. A myriad of Digital-related technical course offerings are available, as well as courses dedicated to Lotus, Microsoft, WordPerfect, and others. "We continue to add to our base of multivendor products through rigid agreements with ATI, CBT, Serotoga, Learn PC, and Hands On Learning," he explains.

"At present, we offer training on more than 50 different non-Digital products,

and our portfolio of course offerings continues to expand. What's more, we have more than 100 international training centers — all of which position us as a true Open Education vendor in terms of end-user training."

Nontechnical Training: The Demand Increases

In the ever-demanding business environment, the race to keep up with technological advancements or the decision to streamline the work force creates a new set of challenges — challenges that focus on the human side of business.

"Businesses may be acquiring state-of-the-art equipment, but they are left with the problem of effectively implementing

"Customers want the highest quality, job-relevant training at the most competitive price."

Pat Casullo
Vice President
Digital's Education and Consulting Services

Open EDUCATION:

Training for a Multivendor World

their equipment in the workplace," Casullo explains. "Businesses that are downsizing need to implement new workstyles to compensate for those jobs that have been left vacant. Managers in each situation are looking for ways to implement change efficiently and cost-effectively."

"Digital provides the solution through a host of nontechnical training courses that deal with changing human dynamics in the workplace," Casullo continues. "Our course offerings cover a wide range of topics including change management, time quality and skills measurement, among many others."

Getting the Most for Your Money

Be it technical or nontechnical services, company training is made easier when customers are able to pick and choose the format through which they learn. Along with traditional on-site and classroom training, Digital offers a complete range of educational formats that includes books, audiotapes, videotapes, training from CDROM, interactive videodisks, customized multimedia programs, and satellite broadcasts.

"Customers want the highest quality, job-relevant training at the most competitive price," Casullo states. "All of our course offerings, particularly our Unlimited

Training Subscription package, give customers what they need to efficiently accomplish the jobs they are asked to do."

continued

The Unlimited Training Subscription offers customers group rates for a full year of intensive training in applications design, development, management, and operations. "The subscription is popular with students because it gives them flexibility in the types of courses they take. No more working out a budget or getting permission to take each individual course," Cataldo explains. "Managers benefit from this comprehensive training plan because it involves one flat fee and little administrative work."

Digital Meets the Need for Reskilling Workers

One phase of Digital's Education and Training Programs is prompted, in part, by today's economy. To survive and prosper, companies are dealing with changes in their business strategy. Workforce reduction may be at hand. Those who remain on the job need to take on more roles. As a result, reskilling becomes crucial to a company's success.

"When you talk about reskilling, you're really talking about a customized training solution," Cataldo explains. "Digital has the resources to provide a training needs analysis for a company, and then customize and

implement a reskilling program for them. It's an efficient and cost-effective route for businesses to take if they are thinking about reskilling their labor force."

Cataldo notes that reskilling also provides a crucial advantage to individual workers looking for employment.

"Recently as a result of his company's restructure, an individual in the Boston area decided that reskilling was in his best interest. He started our technical training program in July 1991. By the end of November, he was employed in a new job requiring an entirely different set of skills from those of his former position," Cataldo says. "Although there is no guarantee of placement, students who complete our training programs are equipped with highly marketable skills in a number of areas not previously open to them."

Open Education Is the Key

With a growing menu of Digital-related courses, more than 90 non-Digital product courses, and a variety of non-technical offerings, Digital's Open Education curriculum is your best solution for keeping up with today's changing business trends.

Course Menu Sampling Serves Up Open Education

Digital's Education and Training Programs demonstrate our Open Education philosophy in the kinds of courses currently being offered. What follows is a selection of non-Digital product courses designed to assist you with your company's multivendor challenges.

- An Introduction to VMS for MS-DOS
- Teach Yourself WordPerfect
- Training for Quattro Pro V3
- Systems Network Architecture (SNA)
- Open System Interconnection (OSI)
- TCP/IP
- ANSI/C Fundamentals

Nontechnical Offerings Cover a Range of Topics

Our variety of nontechnical training courses assists you with improving individual and team efficiency and productivity. A sampling follows.

- Effective Presentations
- Coping with Stress
- Project Management Fundamentals
- Communication Skills
- Essentials of Negotiation
- Skills Assessment and Career Management

To register for or to get information for any Digital lecture/lab, course, or seminar, call 800-332-5656.

IT'S A FACT VAXstation 4000 VLC SHATTERS the Workstation Myth

The real story behind Digital's VAXstation 4000 VLC may surprise you. In fact, you may not look at a VAXstation the same way again.

MYTH: VMS workstations are too expensive.

FACT: VAXstation 4000 VLC prices start at just \$3,450 — the first workstation in the industry to break the \$3,500 price barrier.

MYTH: Workstations are too big for the desktop.

FACT: VAXstation 4000 VLC takes up no more room on your desktop than a PC or terminal, just 2 1/4 inches high, and measuring 15 inches by 14 1/2 inches. Add a keyboard and a small monitor to complete the package.

MYTH: You can't run your favorite applications on a workstation.

FACT: VAXstation 4000 VLC can run any of the more than 6,500 VMS applications, including Lotus 1-2-3 and WordPerfect for VMS. What's more, by using DEC SoftPC, Digital's PC emulator, you have access to over 50,000 PC applications.

MYTH: A workstation will decrease your VAX functionality.

FACT: On the contrary, you increase your functionality and your productivity by gaining the use of windows and tools such as DECwrite and DECpresent.



A Few More VLC Features

What else should you know about the VAXstation 4000 VLC? Built-in features include:

- 6.3 SPP/Clocks of processing power
- Standard 2D accelerated graphics for application enhancement
- High-performance I/O architecture
- Full MS 250 software, including innovative NCA technology and DECwindows Motif.

VAXstation 4000 Model 60:

Powerful Core of the VAXstation 4000 VLC

For more power, choose the VAXstation 4000 Model 60 with 12.5SP/Clocks of processing power. The Model 60 comes equipped with all the features of the VAXstation 4000 VLC — plus more expansion capabilities in the way of memory and options, including 3D graphics and the TURBOchannel open bus.

For high performance at your desktop, choose the VAXstation 4000 VLC or VAXstation 4000 Model 60.

Order Information

VAXstation 4000 VLC system (3 MB)
17-inch graphics monitor (1024 x 768-72 Hz)
Order # P31A-A0
\$3,450

VAXstation 4000 VLC system (3 MB)
19-inch color TriVision monitor (1280 x 1024-72 Hz)
Order # P41A-C0
\$6,750

VAXstation 4000 Model 60 system (3 MB)
17-inch graphics monitor (14 plane 1280 x 1024-72 Hz)
Order # P41A-B0
\$5,995

VAXstation 4000 Model 60 system (3 MB)
19-inch color TriVision monitor (1280 x 1024-66 Hz)
Order # P41A-A0
\$11,995

Note: These are examples of top-selling configurations. Other system configurations are available. All VAXstation workstations come with single-user VMS and MS 250 licenses.

For information on these and other VAXstation 4000 configurations and options, call 800-ENG2TAL (800-344-6825).

PARTNER SHIPS

Digital and Amnet Computer
TEAMWORK AT ITS BEST

In conversation with Rich Ward, Executive Vice President of Sales and Marketing for Amnet Computer, the word "partner" pops up frequently. He chooses this particular word to describe his company's 15-year relationship with Digital Equipment Corporation.

Headquartered in Culver City, California, and with branches across the United States and Canada, Amnet is Digital's first and largest distributor. But, even this description isn't suitable. Ward prefers to describe Amnet as an Information Technology Supplier — a company that is involved in designing, system configurations and integration, as well as distribution.

Ward selects his words carefully, and so he should. Amnet is much more than a distributor of Digital's products. Its particular expertise and value-added services are what has kept customers satisfied — and what continues to strengthen Amnet/Digital ties.

Expertise on the Digital Line of Products

Amnet is on the way to selling its second billion dollars worth of Digital products and services. With this kind of experience and customer base, Amnet has assembled some of the industry's best sales professionals and technical engineering staff members to support the desktop to the data center. Amnet utilizes this core strength to support Digital's large Fortune 100 class customers — adding value primarily through complementary and flexible programs.

"We certainly have expertise on the Digital product line," states Ward. "And we are second only to Digital in our ability to configure and design Digital systems. Our Systems Integration Unit is capable of doing all types of work without hesitation."

Ward emphasizes that his sales team — all of whom complete Digital's training program — is one of the best in the industry. "We know Digital inside and out," Ward says. "When

Digital cannot provide service to a customer due to a time or cost factor, we can and do."

Three-Way Partnership Offers Solutions

With expertise in Digital's hardware technology and strategic relationships with software providers, Amnet is providing application solutions to the computer market. An example is the three-way partnership between Amnet, Digital, and Escalibur Technologies.

Escalibur Technologies has recently introduced a low-cost, entry-level, imaging, text and file retrieval system. Configured with Digital's RISC-based workstations, the system functionally replaces conventional file cabinets. The system is unique in terms of cost and in terms of its text-based technology.

"Basically, Digital and Amnet are taking a software product to market," Ward explains. "Digital has supported Escalibur in developing the product, and we are implementing a marketing plan. One package we'll be offering has the functionality and capability of competitive solutions priced in excess of \$100,000. Our solutions will start at less than \$40,000."

More than a supplier
distributor alliance.

Digital and Amnet are a
winning combination.

According to Ward, Amnet has also begun to form partnerships with value-added resellers (VARs) so that customers are assured of constant and consistent service.

Added Value Means

Customer Satisfaction

"Installed-base customers are looking for efficient and cost-effective ways to add on to or upgrade their systems. They are also looking for service. We provide all that and more," says Ward.

To that end, Amnet offers services which include:

• System Evaluation

Providing information you need in order to take full advantage of your system's capabilities

• On-Site Demo Capabilities

Giving you a first-hand look at how new products can improve system performance

• Systems Engineering Group

Improving the high standard of technical support already in place for you

• Proposal Center

Providing you with all the financial and technical information you need to make a decision on system add-on or upgrade purchases

• Literature Center

Offering you a centralized portfolio of manufacturers' literature

• Two Hotlines

Open 11 hours a day for technical questions or problems.

Amnet Philosophy:

Putting Your Needs First

"We have some unique services at Amnet that clearly demonstrate our 'customer first' message," says Ward. He talks about Bob Grace. Although he is an Amnet employee, Grace is an insider who represents you. His job is to listen to your complaints, investigate the root causes of those complaints, and find solutions. "This grass-roots approach to customer satisfaction helps they need immediately," says Ward.

A toll-free line will also be in place in the near future to give you access to key staff should you be dissatisfied in any way with Amnet's service.

Clearly a Digital partner, Amnet Computer offers you a strong complement of systems integration expertise and value-added service. What's more, the Amnet/Digital team can provide complete solutions for your business challenges.

For more information on Amnet Computer, call 800-426-7999.

Digital SERVICenters

Offer 57% Savings

If you're in the market for repairs, head to a Digital Carry-In SERVICenter near you. With a service menu consisting of more than 10,000 computer products from more than 1,000 vendors, your SERVICenter offers quality work at a quality price.

And now, SERVICenters save you even more money — with a material price reduction of 33 percent on all Digital parts used in repair or exchange. What's more, product repairs won't mean downtime for you. All of our 180 Carry-In SERVICenters offer turn-around time of as little as two days, along with module exchange for many Digital products.

For information on the SERVICenter location nearest you, call 800-225-5285.

Get Data Fast with the ESE50

If you want the fastest access to stored data with leadership price/performance, Digital's ESE50 Solid State Disk has it.

Boasting an access time of 0.25 milliseconds, the ESE50 provides lightning fast access for response time-critical applications — good news for many industries, including banking, transportation, insurance, and manufacturing.

With a lower cost per megabyte and a capacity of up to 640 megabytes in a standard 8-inch, half-inch 54-mountable package, the ESE50 is not only affordable for new applications, it's your best solid state disk storage solution.

Workgroup Document Management:

Now It's Easy

You want all the benefits of a corporate structured library at the departmental level — and at an affordable price. Now you can get it with the Team Document Library Solution from Digital and Information Dimensions, Inc.

Incorporating soft ware, installation, and customization services, the Team Document Library Solution enables your workgroup to organize, manage, and share dynamic document information, within an easy-to-use document library. The result? Major improvements in overall workgroup productivity. Key solution features include:

• Check-in/out and version control for better management of document revisions

• Command-based retrieval for fast access to information

• Ability to launch and use familiar desktop document programs

• Startup and support services, including installation, GUI customization, and database population.

What's more, your PC- and Minicomputer-based workgroup can continue to use their familiar desktop document programs.

For more information, call 800-DIGITAL.

(800-344-4825), ext. 252.

BEST COPY AVAILABLE
FOR REPRODUCTION



BEST COPY AVAILABLE
FOR REPRODUCTION

Ethernet provides low-cost links to FDDI

BY JOANIE M. WEXLER
CNET STAFF

BILLERICA, Mass.—As a scoring number of on-line transactions prompted Harte-Hanks Data Technologies to install a high-speed backbone system from Synterics, Inc. last month.

The LANplex 5012 from Harte-Hanks' Billerica neighbor allows the database quality-assurance service to eliminate manual tape backup operations, interconnect multiple computing platforms and generally speed delivery time to customers, said Dick Man, vice president of product support.

Harte-Hanks, a subsidiary of San Antonio-based publisher Harte-Hanks Communications, Inc., is in business to streamline databases for banking, insurance and retail clients such as Chemical Banking Corp., John Hancock Life Insurance Co. and Federal Department Stores, Inc.

Homegrown software merges multiple entries of names and addresses that have made their way into a client's database and then consolidates data into purchasing summaries to allow client firms' marketing executives to better analyze demographics and buying trends.

The firm handles 150 data-

bases from major companies in the three industries along with other smaller jobs, Man said. He estimated a typical banking customer has 50 to 60 gigabytes of data stored on Harte-Hanks' Amdahl Corp. 5860 300E at the time.

Harte-Hanks chose the Ethernet-to-FDDI Distributed Data Interface (FDDI) switching hub from Synterics because of burgeoning volumes of data demanded a high-speed, on-line networking capability between its mainframe and its personal computers and workstations, where the cleaned-up databases are formatted for customers.

"We needed a reliable way of passing data without an operator having to mount any tapes on PCs and workstations," Man explained.

Harte-Hanks more than doubled its customer accounts from 1990 to 1991 (see chart), and the firm continues to gather new clients with more entries to be processed. As a result, it is expecting delivery of their multiplexed database tapes more frequently to refresh their market offerings, Man said.

Synterics' FDDI is a bus technology that uses a new variation of "switching hubs" that are emerging to migrate users from existing local-area net-

works to next-generation LANs. The Synterics hub is somewhat of a cross between an Ethernet-to-Ethernet switch from Kalpana, Inc. in San Jose, Calif.,

without bearing the brunt of FDDI connection costs for every workstation on the network, Man explained. This is because the mainframe, workstations and Unix file servers sport low-cost 10Base-T Ethernet connections rather than high-priced FDDI links. The mainframe connects to the LANplex through channel-attached gateways and to other computers or lightly populated 10Base-Ts connect via smart wiring hubs.

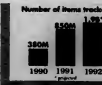
The LANplex dedicates to each computing resource the full 10M bit/sec. of Ethernet bandwidth, bridged over three internal 10Mbit/sec. FDDI backbones logically configured inside the LANplex bus.

Prior to installing the LANplex, mainframe-formatted data would be backed up to a nine-track tape, then manually restored onto a PC or workstation.

"With LANplex, together with TCP/IP software, we now have on-line network connections and no longer use nine-

ON SITE
Harte-Hanks
Data Technologies
Billerica, Mass.

- **Challenge:** To speed the delivery of a burgeoning volume of multiplexed databases to clients while moving to unattended operations.
- **Key product:** LANplex Ethernet-to-FDDI switch from Synterics, Inc. in Billerica.



and an FDDI-to-FDDI switch demonstrated by Digital Equipment Corp. at its DECworld '92 show in Las Vegas last month.

Synterics' LANplex 5012 also allows Harte-Hanks to connect on FDDI's 100M bit/sec. speeds

track tapes," Man said. "It used to be very labor-intensive to load them. Now we don't require any operator intervention at the workstation or PC."

An alternative would be to install fiber cabling and relatively high-price FDDI connections. Harte-Hanks also evaluated FDDI technology from Flarcom International, Inc. in Hyannis, Mass., but found the "price/performance" of the LANplex far superior," Man said.

Bridge savings
Ethernet-to-FDDI bridges from Flarcom would have cost the company about \$10,000 per port, compared with just over \$3,000 per port with the LANplex, Man said. In addition, the Synterics bus was able to eliminate the need for more LAN segments than Flarcom's devices—important to Harte-Hanks, which is installing growing numbers of X terminals to allow technical analysts to access the Amdahl and Unix computers simultaneously.

Man estimated that LANplex has already cut a day of customer turnaround time. He said he expects more streamlining when the firm has more experience with the product.

The migratory FDDI approach was attractive, Man said, because "we want to learn the behavior of the network before we optimize it for FDDI."

Retix, ACC announce new routers for LANs

BY JOANIE M. WEXLER
CNET STAFF

Router vendors are continuing to tweak their products to use gigabit networks and to allow local-area networks to operate at near-full-bandwidth speeds.

Announcements this month from Retix and Advanced Computer Communications, Inc. (ACC) address the growing need for "separate but equal" processing of multiple protocols in routed LAN environments.

For example, Santa Monica, Calif.-based Retix announced a reduced instruction set computing (RISC)-based router that designates a specific processor for each protocol type, rather than requiring that all protocols contend for one chip's processing power.

Meanwhile, ACC, based in Cupertino, Calif., outlined its bridge/router with a fair-queuing mechanism designed to even out the bandwidth availability across wide-area links. ACC's goal is to prevent, for example, users who are "hogging" bandwidth from a remote database from suddenly bumping others off-line for several minutes because they

have decided to download a huge file.

The Retix and ACC approaches differ in that the Retix announcement is geared toward beefing up the throughput of the router. The ACC enhancement to its Series 4000 devices approaches bandwidth based on a feature that researchers who have sent packets recently, then devices up bandwidth on a first-come, first-served basis.

Retix designed its architecture around multiple Intel Corp. 80386 processors. The \$9,200-and-up RouterExchange 7000, slated to ship in the third quarter, is said to treat all protocols equally efficiently.

"Retix is going along with what many hub and router vendors are doing to improve performance without requiring users to upgrade to FDDI," said Jennifer Page, program manager of data communications at Boston-based consultancy The Yankee Group.

"If I had a RISC-based LAN with signals being transmitted and received at the same time, it would be like filling up a pipeline with a siphon," said Glenn Grieco, computer information

consultant at the Washington state Department of Ecology in Olympia. The department currently uses Retix's 4900 series of bridge/routers.

Grace said he may require enhanced router performance within two years because of new geographical information system applications coming down the road.

LAN-to-ATM connection

Retix has also outfitted its new router with an interface to Asynchronous Transfer Mode (ATM) cell-relay switches, which would ultimately allow LANs to link to ATM wide-area networks, according to Randy Phillips, vice president and general manager of Retix's interconnecting products unit.

While Phillips declined to say whose ATM technology the firm used in its interface, he did say Retix will soon demonstrate compatibility with ATM switches from Adaptive Corp., a Redwood City, Calif., subsidiary of Network Equipment Technologies, Inc., and Fore Systems, Inc. in Pittsburgh.

The bandwidth-hogging problem addressed by ACC's software is one that Oracle Corp.—which will soon test the product—experiences at some of its low-key international sites, said Jack Harvey, internet architect at the Redwood Shores, Calif.-based database company,

Harvey explained that many router vendors currently offer mechanisms for assigning a high- or low-priority queue to each protocol to be routed.

However, the protocol-to-queue matching "is not attractive long-term, because in client/server computing, your inter-

active and bad traffic is mixed within the same session. How do you pick which queue to assign your traffic to?"

Harvey described the ACC enhancement as a "refreshing approach," though how well the technology works will be the true test, he said.

AT&T adds long-distance fraud protection program

BY ELLES BUCKER
CNET STAFF

CHICAGO—Seeking to curb some of the estimated \$1 billion worth of long-distance toll fraud annually, AT&T recently introduced NetProtect, a family of products and services designed to detect and reimburse customers whose telecommunications services are compromised.

With NetProtect Basic Service, which is offered at no additional cost to AT&T long-distance and 800-number customers, AT&T will monitor calling patterns to spot fraud and alert customers. Monitoring of AT&T 800 lines began last week, and monitoring of international long-distance patterns to some countries will begin Aug. 1.

Other options in the plan include the following:

- **Enhanced Service**, which provides more customized monitoring and a \$25,000 per incident/per location limit on the customer's financial liability.
- **Premium Service**, which reduces customer's financial liability to zero, providing they follow AT&T's private branch exchange (PBX) and security recommendations.

Other options include a fraud detection service for AT&T's Software Defined Network, a consulting service, Hacker Tracker software for AT&T PBXs, a real-time service for detecting and stopping toll fraud while it is in progress and a handbook with technical documentation and tailored training for preventing fraud on AT&T PBX and voice-mail systems.

Sprint Corp. recently announced a similar service.



If you're inter take your time

Motorola Codex Introduces the first
V.fast dial modem.

An announcement like this is sure
to excite anyone who
subscribes to the
theory that time is
money. And in the
dial modem world,
that's not theory.
It's fact.

Our new V.fast
technology makes V.fast, by far, the
fastest dial modem available today.
With throughput up to 115.2 Kbps
async, 19.2 to 24 Kbps sync, it's ideal
for Unix file transfers, dial-up SNA,
CAD/CAM and other applications



*Motorola Codex's new V.fast. You
just can't find a faster dial modem.*

that demand high-speed transfers
of tons of information. Speed like
that also makes something else go

a whole lot faster —
the payback time on
your investment.

V.fast is the latest
example of "famous
firsts in fast" from
Motorola Codex.

We introduced the
first high-speed modem (9,600 bps,
if you're counting). Then, the first full
duplex 2,400 bps dial modem, the
first full-featured V.32 and V.32 bis.

And now, the first V.fast. That's
close to three decades of cutting-edge



If you're in a hurry to save money, call today

I'd like to know more about V.fast

☐ Please send me more information on how my business can benefit from V.fast.

☐ Please have a Motorola Codec Representative call me to set up an appointment.

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

PHONE _____

☐ If you want V.fast information even faster, call 1-800-426-1212, Ext. 508-261-4204.



MOTOROLA
CODEX

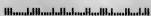
Place
Stamp
Here

Motorola Codex

M2-290

20 Cabot Boulevard

Mansfield, MA 02048-1193

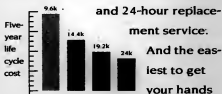


ested in V. fast, reading this.

technology leadership.

Plus, what's arguably
the most complete and
award-winning V.32
product line in the in-
dustry — our 3200 Series

attests to that. It's the most reliable
too. Backed by a two-year warranty



It pays to think fast. The faster the throughput, the faster the payback on your modem investment.

on, because we have
the most sophisticated authorized
distributor network

In North America.

If you're thinking about modems,
we certainly hope

you think about Motorola Codex.

If you're thinking about savings,
we hope you think fast. V.fast from
Motorola Codex.

*Anyone can
move a ton of
information.
The question
is how fast.*



MOTOROLA
codex

for the Motorola Codex representative nearest you. **1-800-426-1212** Ext. 212.
Fax# 508-261-1204.

JONES & JONES INVESTMENT

JACK LOWE, VICE PRESIDENT

LITTLE ROCK

JONES & JONES INVESTMENT

JACK LOWE, VICE PRESIDENT

LITTLE ROCK, CLEVELAND

JONES & JONES INVESTMENT

JACK LOWE, VICE PRESIDENT

LITTLE ROCK, CLEVELAND, PHILADELPHIA

JONES & JONES INVESTMENT

JACK LOWE, VICE PRESIDENT

LITTLE ROCK, CLEVELAND, PHILADELPHIA,
BOSTON, BUFFALO**JONES & JONES INVESTMENT**

JACK LOWE, VICE PRESIDENT

LITTLE ROCK, CLEVELAND, PHILADELPHIA,
BOSTON, BUFFALO, WICHITA**JONES & JONES INVESTMENT**

JACK LOWE, VICE PRESIDENT

LITTLE ROCK, CLEVELAND, PHILADELPHIA,
BOSTON, BUFFALO, WICHITA, DALLAS**JONES & JONES INVESTMENT**

JACK LOWE, VICE PRESIDENT

LITTLE ROCK, CLEVELAND, PHILADELPHIA,
BOSTON, BUFFALO, WICHITA,
DALLAS, NEW YORK**JONES & JONES INVESTMENT**

JACK LOWE, VICE PRESIDENT

LITTLE ROCK, CLEVELAND, PHILADELPHIA,
BOSTON, BUFFALO, WICHITA,
DALLAS, NEW YORK, LOS ANGELES, TORONTO**JONES & JONES INVESTMENT**

JACK LOWE, PRESIDENT

LITTLE ROCK, CLEVELAND, PHILADELPHIA,
BOSTON, BUFFALO, WICHITA, DALLAS,
NEW YORK, LOS ANGELES, TORONTO, TOKYO, LONDON

Only one e-mail system has been able to keep up with the Joneses.

cc:Mail.

It's been with companies like Jones and Jones Investment since their humble beginnings. You see, because its underlying architecture was built to be scalable right from the start, it can grow as a business grows. In fact, it's so scalable, it can accommodate 5 to 500,000 users—without losing efficiency as it grows. cc:Mail even runs on heterogeneous network environments. So adding users onto the network is as simple as loading a disk.

Because of its unmatched scalability, cc:Mail is the proven solution for over 40% of the Fortune 500. Its cross-platform capabilities and its impressive set of administration tools may also have something to do with its widespread popularity with over 1.5 million customers worldwide. One more thing: cc:Mail has won every major industry award, including InfoWorld's 1991 Product of the Year Award, Byte Magazine's

1992 Annual Reader's Choice Award and LAN Times' 1992 Reader's Choice Award.

So for a free demo disk of the cc:Mail Macintosh, Windows™ or DOS Platform Pack, call 1-800-448-2500.

cc:Mail. It can keep up with everyone in the business world. Even the Joneses.

Lotus cc:Mail

*Based on independent Mail survey. © 1992 Lotus Development Corporation. All rights reserved. cc:Mail is a trademark of cc:Mail, Inc., a wholly owned subsidiary of Lotus Development Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Windows is a trademark of Microsoft Corporation.

NEW PRODUCTS

Network management

Trellis Software, Inc. has announced an upgrade to its Expose Network Manager for Banyan Systems, Inc.'s Vines.

Expose 1.3 is a server-based management product. It collects diagnostic information on 90 areas of network performance, the company reported. Expose Network Manager 1.3 costs \$1,495 per server license. Upgrades for registered users are free.

The company also has two complementary products for smaller Vines networks: ExposeDraw and Network Observer.

Trellis
85 Main St.
Hopkinton, Mass. 01748
(508) 435-3066

Horizons Technology, Inc. has developed LAN Auditor 2.1, an update of its network inventory and configuration management software.

The new version audits software applications and version numbers on the network in addition to hardware. It can be set to conduct unattended audits at specified intervals. Version 2.1 also includes a more graphical interface and support for the Clipboard under Microsoft Corp.'s Windows.

The price is \$495 for the first 50 network nodes monitored, plus \$395 for each additional 100 workstations monitored.

Horizons Technology
3990 Ruffin Road
San Diego, Calif. 92123
(619) 292-8320

Gateways, bridges, routers

Network Equipment Technologies, Inc. (NET) has announced the NET Ethernet Bridge Option, a software product for the company's NET SPX Intelligent Statistical Multiplexers.

The product connects local-area networks using established wide-area network links, eliminating the need for external routers, according to NET. It also supports terminal-to-host connections and a variety of LAN protocols, including Transmission Control Protocol/Internet Protocol, Local-Area Transport and Novell, Inc.'s IPX.

The NET Ethernet Bridge Option can be configured as a learning bridge to automatically build an Ethernet address table.

The product is priced at \$995. A site license costs \$2,895.

NET
900 Saginaw Drive
Redwood City, Calif. 94063
(415) 366-4400

IDEA Associates, Inc. has announced version 1.2.3 of the IDEA Concert Communication Processor, allowing multihop access over installed local-area networks.

IDEA Concert can now carry IBM Systems Network Architecture data traffic over an installed Ethernet or Token Ring LAN. Users can run standard 3270 and 5250 emulations to IBM mainframes and midrange systems.

Pricing for IDEA Concert runs from \$2,995 (with support for four devices) to \$21,965 (for 96 devices).

IDEA Associates
29 Dunham Road
Billerica, Mass. 01821
(508) 663-6878

Raycon Systems, Inc. has designed a Source Routing Transparent bridge, the Model 3440SRT Local Token Ring Bridge.

The product simultaneously performs source routing and transparent functions, allowing users to mix source-routing hosts with other devices on a single Token Ring local-area network without degrading network performance. In transparent mode, the bridge can handle up to 1,000 device addresses.

The stand-alone version costs \$5,200; a version with a fiber-optic extender is priced at \$5,800.

Raycon Systems
18525 Sherman Way, #C-8
Van Nuys, Calif. 91406
(818) 909-4126

Customer-premises equipment

Gendalf Systems Corp. has introduced a line of Integrated Services Digital Network (ISDN) gateways with diverse multiplex capabilities.

The Gendalf Access SDX ISDN gateways allow users to establish high-capacity connections by using multiple 64K bit/sec. ISDN B channels. High-bandwidth applications such as videoconferencing are supported.

A 64-channel system costs \$12,000. Gendalf Systems
Cherry Hill Industrial Center - 9
Cherry Hill, N.J. 08003
(609) 424-9400

NO OTHER COMPUTER SHOW CAN HOLD A CANDLE TO
PC EXPO in New York

**WANT QUICK
ACCESS TO
PRODUCTS?**

See Computerworld's
Product Showcase.

Page 99



Speed Reading For DBAs.

PLATINUM Rapid Recorg. vs. DB2 V2.3 REORG Utility

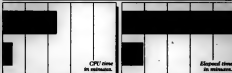
On a 67,000 page tablespace, PLATINUM Rapid Recorg. used 3.34 minutes of CPU time compared to 12.65 minutes for the IBM REORG utility. That's a 70% CPU time savings with PLATINUM.



PLATINUM Rapid Recorg.'s run of 9.57 minutes was 150% faster than IBM's 24.72 minute run. Running PLATINUM also improved EXCP performance. Our run used 35,282 while IBM consumed 54,000.

PLATINUM Fast Load vs. DB2 V2.3 LOAD Utility

On the same 67,000 page tablespace, PLATINUM Fast Load used 2.82 minutes of CPU time compared to 12.53 minutes for the IBM LOAD utility. That's a 70% CPU time savings with PLATINUM.



With performance nine times faster than IBM LOAD (4.82 minutes vs. on of-the-chart 43.43 minutes) and 60% fewer EXCPs, all we can say is, "Wait until you see the numbers for our soon-to-be-released PLATINUM Fast Unload."

PLATINUM Quick Copy vs. DB2 V2.3 COPY Utility

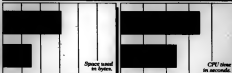
For an image copy of a 67,000 page tablespace, PLATINUM Quick Copy used 12.62 seconds of CPU time compared to 42.49 seconds for IBM. That's a 70% CPU time savings.



PLATINUM Quick Copy's performance of 2.87 minutes was more than eight times faster than the 23.30 minutes it took IBM to copy a 67,000 page tablespace. Our 60% time savings were topped by an EXCP reduction of 50%.

PLATINUM Data Compressor vs. IBM EDTPROC

Starting with a 590,000 byte table of realistic production data, our (UTLD9) compression routine really packed data with space savings of 70% next to 47% achieved by IBM's DB2 V2.3 compression routine.



In terms of processing speed, our UTLD9 compression routine measures productivity. On the same 590,000 byte test table, our .484 second performance topped IBM's .669 second time to yield a 30% CPU time savings.

We figured you might be interested in results of recent speed trials between our suite of products and the DB2® V2.3 utilities provided by IBM®. We suspect you're now wondering how fast our utilities are compared to the other independent offering.

We're faster. And your own benchmarks will prove it.

Call us at 1-800-442-6861 to set up a very fast on-site PLATINUM test or ask your IBM representative to help arrange it. Either way, you'll have made a very swift move.

**PLATINUM
technology**



PLATINUM technology, inc.

555 WatersEdge Drive, Lombard, IL 60148 (708) 620-5000



© 1991 PLATINUM technology, inc. All rights reserved. IBM and DB2 are registered trademarks and DB2/VS is a trademark of International Business Machines Corporation. Each run using IBM V2.3 Common Utility Release 1 (CUT1) (10/88) (1) provided on source code with DB2 V2.3.

LARGE SYSTEMS

HARDWARE • SOFTWARE • STRATEGIES

IN BRIEF

Sequent, CA team up

■ **Sequent Computer Systems, Inc.** will provide **Computer Associates International, Inc.**'s mainframe software for systems management, business applications and information management on Sequent's Symmetry 2000 on-line transaction processing-based systems. The partnership also calls for joint development and marketing of CA's CA-Uniuser, CA-DB, CA-DB-Generator and CA-DB-Generator/Open software applications. The agreement allows Sequent to offer CA's Unix-based software products on its open systems-based Symmetry multiprocessor (SMP) platforms. In addition, the deal calls for Sequent and CA to jointly develop an enhanced version of CA's CA-DB for Sequent's Dymis-px SMP operating system. Both companies expect all software products to be available for general release by the second quarter of 1993.

■ A unit of **Bull HN Information Systems, Inc.** released a product that consolidates existing voice processing systems equipment and speeds customer service queries. Operational Support System Integration Architecture, or OSS-IA, is targeted at large phone companies. Pricing starts at \$100,000.

Data centers do good by recycling well

Firms reduce expenses by recycling everything from tape reels, toner cartridges to aluminum cans

BY JOHANNA AMBROSIO
OF STAFF

It seems to be a perfect business deal for the 1990s: doing well by doing good. Some companies have discovered that one way to accomplish this is with an aggressive recycling program in the data center.

Equitable Real Estate Investment Management, Inc., an Atlanta-based subsidiary of The Equitable, began its recycling program five years ago, according to Jayna Whiddon, data center coordinator. The company recycles paper, tape reels, microcassette masters, laser printer toner cartridges and aluminum cans. The company uses the money made from this program

to fund parties and incentive awards and to buy soda for data center employees.

This kind of commitment is a step beyond what many companies are already doing: recycling paper and aluminum cans throughout the organization, which requires all employees to take part but does not include any data center-specific kinds of items. The company-wide programs are typically run by a general services group out of corporate headquarters.

In contrast, a data center-specific recycling program usu-

ally needs someone in the data center or technical services group to get the program started and to be a point of contact for the corporate services group.

Other companies with aggressive recycling programs include The Travelers Inc. in Hartford, Conn., and Wal-Mart Stores, Inc. in Bentonville, Ark., according to Tim Blanton, executive director at OpsTech, an Atlanta consulting firm.

"The bigger the company and the more they recycle, the more benefits they realize," Blanton

said. "Once the programs get going, they pretty much manage themselves."

But a company does not have to be large to yield bottom-line benefits. The 1,000-employee Equitable Real Estate is realizing significant savings from recycling 400 to 500 of its laser cartridges each year. "We save money, reduce landfill, and we get a better product for less money," Whiddon said.

A new laser cartridge costs between \$85 and \$125. In comparison, a long-life cartridge goes for \$69, and each refill costs around \$47. One cartridge can generally be refilled about six times because the manufacturers put in long-life drums.

Additionally, the recycled cartridges yield more copies and higher quality than their nonrecycled counterparts, Whiddon said.

Better, quicker, faster

A new laser cartridge generally has to run 200 or so pages before the toner kicks in full-speed and the print is crisp and clear. With the long-life cartridges, this process takes place once, and on each of the subsequent six refills, the cartridge is already brimming.

Recycled cartridges also have more toner, so they produce about twice the number of pages than do nonrecycled cartridges.

Whiddon said Equitable Real Estate makes more than \$1,000 a year from selling the paper that the data center uses. Other money is raised by recycling soda cans; these funds are used to purchase more soda for data center employees. Tape reels are recycled by turning the tape around so the end of the tape is now the beginning; this doubles

Continued on page 67

CA pricing revamp gets mixed response

BY THOMAS HOFFMAN
OF STAFF

ISLANDIA, N.Y. — One month after Computer Associates International, Inc. revealed pricing structure changes, users have had a chance to digest the announcement. Their response is mixed, although generally positive.

Seven out of 10 CA users interviewed were receptive to the pricing changes, which they said will help them plot their software strategies better in the near term. In addition, users responding favorably to these changes said that the new pricing structure is indicative of CA's improved flexibility.

Edward J. Skiko, vice president of corporate information technology at General Electric Co. in Stamford, Conn., which recently signed an enterprise-wide mainframe software licensing agreement with CA, said the new pricing changes provide "flexibility in the software licensing process, simplicity in software selection and stabilization of software costs."

Pricing skepticism

However, not everyone was thrilled by the new pricing structure. "I'm not overwhelmed by the economics of" the pricing changes, said Tom Lonne, vice president of computers and communications at Alamo Real-Es-

car, Inc. in Fort Lauderdale, Fla. Lonne, whose firm uses CA's IDMS, Librarian, Tape Management and TopSecret software, is particularly disheartened by CA's new maintenance savings plan. Under the plan, users who pay a one-time subscription fee, which is 30% of the current list program price, can reduce their annual maintenance fees by up to 40%. Lonne does not want to be charged up front to "freeze" maintenance pricing.

In addition, Lonne said he felt unfavorable toward CA's announcement that software pricing would be raised by no more than 5% this year. "That's nice," Lonne said. "I'd like to see them increase functionality by 5% and maintain pricing."

The Information Users Association (IUA), an independent CA user group, was reportedly instrumental in persuading CA to adopt new pricing strategies while addressing the concerns of

Continued on page 66

IF YOUR COMPANY MAELS 500 LETTERS A DAY OUR MAINFRAME SOFTWARE COULD SAVE YOU \$1 MILLION A YEAR

Savings of up to 70% are easily achievable. In fact, impressive savings begin with as few as 100 letters a day. Introducing NAPERSTP™, a Automated Correspondence Systems (ACS). Discover the massive power available to respond and assist in marketing, sales and customer service. Use the ACS for mailroom integration of personalized letter letters with your customer data base. With ACS

you're getting more than a simple letter generator, you're getting a family of powerful new business tools which are easily integrated into your mission-critical, production business systems.

- **NAPER MERGE** for easy re-embroidering of workbooks
- **NAPER WORD** for word processing forms letter building
- **NAPER CHECK** for mail checking, duplication

and otherwise:

- **NAPER MERGE** for mail merge and personalization
- **NAPER TOOL KIT** for on-line letter history and notepad
- **NAPER BOC** for preparation of documentation and manuals
- **NAPER MERGE Batch** Option "B" for high volume letter generation
- **NAPERSTP's ACS** can reduce the elapsed time to prepare a letter from minutes, hours and sometimes days... to a few seconds. Cost savings are even more impressive. With the average cost to produce a letter over \$10, five hundred letters per day would annually cost about \$1.5 million. A savings of 70% puts nearly \$1 million back in

your pocket. In responding to the challenge of high volume mail, automated correspondence represents a far better utilization of resources than word processing.

If you're been struggling with an in-house solution to the customer correspondence problem take another look at the potential million dollar waste of using word processing for high volume mail... then ask yourself if this isn't an opportunity for you to save your company a lot of money while improving end user support.

For a complete literature pack call 708-420-1515. Or write NAPERSTP, Inc., One Berry Court, Naperville, Illinois 60563-8466.

NAPERSTP
708-420-1515

☐ 12
☐ 24
☐ 36
3 year Phone
and Internet

Name _____

Company _____

Address _____

City, State, Zip _____

Phone _____

Operating System ☐ DOS ☐ IBM

HP launches mail-order minis

BY MARK HALPER
CWI/DPV

PALO ALTO, Calif. — A takeoff on mail order is taking root in the minicomputer business at Hewlett-Packard Co., which is using it to increase sales to resellers.

HP recently said it is launching the Quick Ship program for its HP 9000 Series 800, aimed at making certain models available within seven business days rather than one to two months.

Quick Ship is aimed at resellers, but end users will also be able to make purchases, said Lenny Rosenthal, Series 800

product line manager.

The program comes as HP continues to add distributors, value-added resellers and value-added dealers to its Series 800 team. The company has tapped Ingram Micro, Inc., Hallmark Electronics Corp., The Ultimate Corp., MAI Systems Corp. and Arrow Electronics, Inc. over the last 18 months and is expected to sign another large distributor later this month. HP is trying to increase the mix of Series 800 indirect sales from 25% to 50% during the next two to three years, Rosenthal said.

The Quick Ship program is less exten-

sive than classic personal computer mail-order operations because it does not permit flexibility in system configurations.

HP is designating its four lowest end Series 800 configurations for availability through 800-number phone orders. Orders are then sent to HP's Roseville, Calif., manufacturing facility, where they jump to the top of the assembly queue.

The 12-member Series 800 line is HP's Unix-based, multiuser minicomputer family, built on the company's Precision Architecture microprocessor.

The four machines available in the Quick Ship program are the 8-user Model 807, the 16-user 817, the 32-user 827 and the 48-user 837. They are priced at \$17,977, \$34,378, \$47,583 and \$59,743, respectively.

CA pricing gets mixed response

CONTINUED FROM PAGE 65

CA users to improve customer service support.

IUA board member George Emmanuel said he went to IUA's spring conference in Dallas last month "terrified" about how CA executives would respond to IUA membership concerns for improved pricing and customer service support. "We were afraid that they'd throw us out of the room," Emmanuel said. "I was shocked by how [favorably] CA reacted."

Emmanuel, a senior partner at Emmanuel & Farr, a Laguna Niguel, Calif., DMS service company, said vendors such as CA are being forced to change their policies as the use of information technology shifts from centralized data use to distributed computing and client/server environments. "Vendors like CA have to wrestle with the fact that this is going to be a brand new world, and it's either change or die," Emmanuel said.

Listening to customers

CA acknowledged that it had to become more responsive to its customers with regard to changes in its pricing and customer service support structure, a problem that the \$1.4 billion software giant has been trying to overcome for years. "I think that we have to listen to a broad cross-section of different people, including different user groups and analysts," Charles Wang, CA's chairman and chief executive officer, said in a recent interview.

Most of CA's new pricing plans are aimed at securing users who will use CA software for five years or more. Mike Egan, an analyst at Meta Group, Inc., said the new pricing policies are attractive for those users who expect to run a CA mainframe system and application software for a long time and for those who can pay for the maintenance and licensing costs up front.

However, Egan said he is advising his 100-plus mainframe system user clients to consider alternatives.

"Almost all of our clients are negotiating a better deal with Legent Corp./Goal Systems International, Inc., Boole & Babbage, Inc., Candle and even IBM on what they can negotiate with CA," Egan said.

Colin Crook, a large CA user and chairman of corporate technology at Citicorp NA in New York, agreed. "I think everyone needs to study [pricing] in some detail," he said.

To qualify for the new pricing programs, users are required to register for CA's Total Client Care (TCC) program at no charge. But many of Egan's clients have been reluctant to sign up for TCC because the program permits CA to monitor where and how its software is being used throughout users' information systems shops, he said.

Other users were more upbeat about the price changes.

"It's great. The issues of upgrading licenses by size, consolidation and the licensing issues raised therein show that CA has taken good points of contention raised by its customers," said David Moore, senior vice president at Mellon Bank Corp. in Pittsburgh.

To many, System Managed Storage is a journey. We've made it a destination.



Presenting the hottest ticket in system managed storage.

It's called SAMS™ — Storage Automation Management System™ — and it's a destination in demand because it doesn't force you to work within a set of rigid system requirements. It's a comprehensive, independent, system managed storage solution that's also fully compatible with DFSMS. Which means you're not committing to a single truck, single vendor solution — you'll always have options.

SAMS is also very, very affordable.

Yet, for all its flexibility, SAMS is powerful.

Which means you can enjoy the benefits of fully-automated system managed storage without suffering the high costs and problems often associated with it.

SAMS frees your staff from daily storage management chores by analyzing your storage environment, and then automatically acting based

on policies you set. It offers file management, allocation control of all data types across multiple control points, online compression, and real-time graphical displays of storage utilization, including data set details and SMS constructs.

So you can monitor and manage your SMS and non-SMS data in one solution. And handle your ever-growing data load without growing your storage resources.

Which makes SAMS a very popular solution with the world's leading businesses.

Call Sterling Software at (916) 635-5535.

Your ticket to affordable system managed storage is ready.

STERLING SOFTWARE
THE FUTURE IS STERLING

Sterling Software, Systems Software Marketing Division, 11050 White Rock Road, #100, Rancho Cordova, CA 95670. (916) 635-5535.
Sterling Software is a registered trademark of Sterling Software, Inc. All other product names are trademarks of their respective companies.

New app spurs backup plan

BY THOMAS HOFFMAN
CHICAGO

NEW YORK — Growing demand for processing — stemming largely from a new business service — has prompted Wall Street's largest clearinghouse for securities trades to build a backup data center and to place that center close at hand.

The Depository Trust Co. (DTC), with \$5.5 trillion of securities on deposit, will introduce a new report this summer. The results of securities trades made each business day will be sent out to DTC's 548 participants, which are mostly major banks and brokerages.

Because DTC has to complete transaction processing for the new report and for other operations by the close of each business day, the company decided to construct an alternate data center near its main data center so processing can be reestablished within three hours, according to Christopher Lord, DTC's systems software director. The new center is scheduled to be operating by July 1.

DTC has relied on Sungard Data Systems, Inc. for disaster recovery at Sungard's facilities in Philadelphia. However, Lord noted, it takes 24 hours for DTC to resume processing at the Sungard center after a disaster — far longer than DTC can stand by with its plan for the new commercial report.

The disaster recovery center in Manhattan will enable DTC to handle short-term commercial transactions in which same-day settlement is vital.

Mirror images

The new backup data center will mirror DTC's primary center in terms of equipment, housing at IBM Enterprise System/9000 Model 830 mainframe, three Storage Technology Corp. ACS 4400 automated tape library subsystems, 8000 bytes of IBM direct-access storage devices and a FileTek, Inc. optical disc-based Storage Machine.

DTC officials would not disclose the cost of the new facility.

Lord said the FileTek machine, which was installed at DTC's main data center in 1986,

serves 1,300 staff members and has already saved the company \$1.4 million in microfiche storage costs. The write-once read-many-based optical disc system houses 12-in. platters. DTC's IBM mainframes run IBM's MVS/ESA SP Version 4.2, DB2 and CICS systems software.

Concurrent storage

As information is transmitted from banks and brokerage houses each day to DTC, updated records will be written to disk files at both facilities.

The facilities will be linked to each other via fiber-optic cable, using IBM's Escon architecture as well as a bus-and-tag connection.

DTC's primary IBM mainframe and the backup FileTek machine will be linked through channel connections as if the FileTek unit were locally attached.

Lord said the fiber-optic connections will provide DTC with more communications flexibility, since bus-and-tag connections are limited to distances not exceeding 400 ft.

Data centers cut expenses by recycling numerous items

CONTINUED FROM PAGE 65

the tape's life. Other items that companies can consider recycling, according to Blanton, include printer ribbons, compact disc, plastic printer toner bottles and personal computers. The plastic from the latter three are used to make a new material called Polywood.

"You can cut it, mill it, glue it — do everything except burn it," Blanton said. Some Polywood manufacturers will even pick up PCs and other items from out of state.

Getting firms to pitch in

The largest challenge in getting started can be finding manufacturers willing to cooperate.

"We asked about toner cartridges, but apparently we didn't ask the right people," said Emily Johnson, corporate data center manager at Stop & Shop Cos. in Braintree, Mass. "We're interested in recycling any way we can."

The company already recycles 76% of the paper produced

by the data center, and it plans to address an even higher percentage within a few months when it begins recycling all paper, not just white bond.

Johnson said trash pickup costs have decreased by 42% since the program began in October 1990.

Blanton suggested that anyone interested in recycling data center items contact the local branch of the Environmental Protection Agency, which maintains lists of vendors that work with user organizations to recycle.

He also suggested that users line up at least two vendors for every recyclable item. "I see vendors come and go, so keeping a backup is a good idea," Blanton said.

Another crucial component is employee education so everyone knows just what to recycle and how to do it. End users can even become involved with trade-in programs for printer ribbons and cartridges.

NEW PRODUCTS

Utilities

Princeton Softech, Inc. has announced a new release of Version Merger for mainframes.

Release 3 offers a direct interface to Legent Corp.'s Endeavor change management system, as well as moved record support, logic review areas and the ability to ignore changes among versions that are limited to comment records.

Pricing for Release 3 of Version Merger starts at \$18,700 for a site license. Princeton Softech 100 Route 518 Business Park Drive CN 812 Princeton, N.J. 08542 (609) 497-0205

Raxco, Inc. has announced version 3.0 of Tapecontrol, an automated tape management system for VAX/VMS systems.

Tapecontrol prevents accidental overwrite of data and secures confidential off-line information from unauthorized access. Version 3.0 features a common network database for centralized support of remote tape operations and automated scheduling of nightly backup procedures. Enhanced off-site vault management, tape cleaning, tape replacement scheduling and a command-line interface are also included.

Tapecontrol is available for VAX systems running VMS 5.X with licensing fees ranging from

\$1,950 to \$11,500, depending on the VAX configuration.

Raxco

Suite 200
2440 Research Blvd.
Rockville, Md. 20850
(301) 258-2620

Artech Software, Inc. has upgraded Sniper, an idle process management software package for VMS systems.

Sniper 1.2 manages file processes and tracks available disk space. Performance is enhanced in the new release, which also includes new utilities for viewing and altering Sniper's configuration file.

Pricing ranges from \$495 to \$2,195, depending on the central processor and system configuration.

The company also announced a competitive upgrade program that allows users of another idle process management package to purchase Sniper 1.2 for \$250.

Artech Software
Suite 500
19800 MacArthur Blvd.
Irvine, Calif. 92715
(714) 957-1978

Advanced Systems Concepts, Inc. has released DeviceShare Version 2.0 for Digital Equipment Corp. VAX systems.

DeviceShare allows users to access storage resources that are not directly connected to their local node. The product lets VAX systems share resources without the system overhead of a VAXcluster, the company said.

Pricing starts at \$2,495 for a MicroVAX or small VAX configuration and runs to \$5,000 for some VAX 9000 models.

Advanced Systems Concepts
33-41 Newark St.
Hoboken, N.J. 07030
(201) 798-6400

Applications packages

Software Engineering of America, Inc. has announced the availability of Keys Release 3.2.

Keys is a help desk automation package for VMS systems. It provides an on-line system for collecting, organizing and storing information on data center modifications. Enhanced archiving capabilities, database recovery features and new interfaces to popular job scheduling packages have been added to the new release.

Pricing on MVS systems ranges from \$12,500 to \$35,000. Keys is also offered for VSE systems.

Software Engineering of America
2001 Marcus Ave.
Lake Success, N.Y. 11042
(516) 328-7000

System software

Parityte, Inc. has created Parix, a new software environment for high-performance parallel processing.

Parix runs on any Parityte system of 16 or more nodes that is linked to a Sun Microsystems, Inc. front-end system. It is fully scalable, according to the com-

pany, and allows users to develop applications with standard Unix tools. Parix provides program development tools as well as tools for machine administration and control.

Pricing for a 64-code Multi-Cluster 1 system running Parix starts at less than \$100,000.

Parityte
Building 9, Unit 60/61
245 W. Roosevelt Road
West Chicago, Ill. 60185
(708) 293-9500

Database management systems

Goal Systems International, Inc. has released Version 3 Release 1 of DB-Delivery for IBM's DB2.

DB-Delivery provides a set of database management tools for migration, catalog management, table editing, security and other functions. The new version provides enhanced change management services, a DB2 console log, full support for DB2 Release 2.3, enhanced shadow catalog support and other improvements.

Pricing ranges from \$25,000 to \$56,500.

Goal Systems
7995 N. High St.
Columbus, Ohio 43235
(614) 888-1775

I/O devices

Coax Direct, a division of Sherwood Digital Electronics Corp., has announced three new coaxial interface products for IBM printers. The products connect IBM

4019, 4029 and 4226 printers to a variety of processor types including 3090, 9370 and 3270 controllers. Features include automatic page-orientation printing and computer output reduction.

Retail pricing for the CD 4019, CD 4029 and CD 4226 controllers is \$995.

Coax Direct
2252 South 3600 West
Salt Lake City, Utah 84119
(801) 974-0526

Data storage

Emulex Corp. has announced the Palomar line of rewritable optical storage systems.

Palomar systems provide from 15G to 85G bytes of near-line storage capacity in removable 600M-byte cartridges. The products include an optical jukebox, jukebox management software and a host adapter for connection to the appropriate interface, including Small Computer Systems Interface, Digital Equipment Corp. VAX/HSC, Q-bus and Unibus systems.

According to the company, Palomar systems can exchange data with DEC's W2104 rewritable drive. Emulex's Laser Manager software, included with the storage systems, provides operator utilities, catalog functions and a database of file and volume information.

Pricing ranges from \$57,385 to \$205,800.
Emulex
3545 Harbor Blvd.
Costa Mesa, Calif. 92626
(714) 663-5600

REACH OUT AND ACCESS EVERYTHING



EDA/SQL FROM INFORMATION BUILDERS: The Industry Standard Client/Server Solution That Lets Any Tool Access Any Data, Non-Relational or Relational, From Any Desktop.

INACCESSIBLE DATA IS USELESS

You've spent a lot of years and a ton of money building up the databanks you need to call on regularly to help run your business.

But, can you access your data fast when you need it?

Even worse, if it's on an incompatible platform, can you access it at all?

Chances are the answer is no.

HOW BIG BUSINESS LOOKS AFTER BUSINESS

Happily there's another answer to the problem. It's called Enterprise Data Access (EDA/SQL) from Information Builders. The people who specialize in distributed information systems.

EDA/SQL extends the reach of desktop solutions. It enables virtually any application or end-user tool that supports SQL to transparently reach any data in non-relational database files from any workstation.

REACH OUT AND RETRIEVE

With so many SQL tools integrated with many of the proprietary databases, you need a standard method of access with the power and flexibility to extend their range across distributed, multivendor systems environments.

EDA/SQL lets you do it — and with both relational and legacy data systems, so your investment in all of your existing data is future proof.

Nothing else delivers this universal, flexible, access

capability in the day to day management of all your company's data.

So when you need to reach data, regularly, quickly, and regardless of platform, there's only one company to call.

Information Builders, the distributed information systems specialist.

For more information on EDA/SQL and how it can solve all your data access problems or to attend a FREE Seminar...

Call 800-969-INFO

In Canada call 1-416-364-2760

IBI EDA/SQL
Information Builders, Inc.

APPLICATION DEVELOPMENT

CASE • LANGUAGES • TOOLS

IN BRIEF

Netron links to Bachman

Netron, Inc., based in Toronto, announced a bridge to link its code generator to analysis and design tools from Bachman Information Systems, Inc.

Netron's CAPLink to Bachman Version 1.0 uses data flow information designed with Bachman/Analyst and Bachman/Database Administrator modules to produce reports, 3270-style screens and graphical interfaces for OS/2 or Microsoft Corp. Windows-based applications.

The product is priced at \$1,000.

IBM Application System/400 applications maker Software 2000, Inc., said users will be able to modify human resources, financial and other packaged programs with application development products from Symyx Corp., which makes tools for IBM's microcomputer line.

The first phase of the plan will let users build extensions to existing Software 2000 applications via Symyx Data Model. The two firms also plan to modify Software 2000's Application Manager 2000 so that it can directly access Symyx's Application Development tool set.

Clarion Software Corp., which makes personal computer-based development utilities such as Clarion 4GL, merged with James & Partners International (JPI). A 5-year-old compiler maker in London, JPI is headed by Nick James, one of the co-founders of Borland International, Inc.

The new company, Clarion TurboSpeed Ltd., is a wholly owned subsidiary of Clarion and will integrate JPI's TurboSpeed family of compilers for Pascal, Modula-2, C, C++ and Clarion 4GL with Clarion's Professional Developer 3.0 tool set.

Xbase plan called a victory for users

BY GARRY RAY
CI/DPW

A proposal submitted to the American National Standards Institute (ANSI) last month represents a victory for Xbase users and application developers, according to its proponents in both the consulting and user communities.

Users also said they are reaping immediate benefits from the proposal, even though an Xbase language standard will be at least a year in the making.

"A standard will benefit everybody," said Joseph Grah, a senior developer at Union Central Life Insurance Co. in Cincinnati.

David Streit, local-area network manager at Deloitte & Touche in New York and a board member of the 700-member Microcomputer Manager's Association (OMMA), said it "matters a lot to people who come from multipatform environments."

Driving the proposal are concerns that multiple Xbase implementations are causing chaos in the user, developer and information systems communities.

Mark Schnapp, a Flushing,

fluency on the corporate and user side" of database application development.

Users of Xbase language products such as Borland International, Inc.'s dBase and Fox

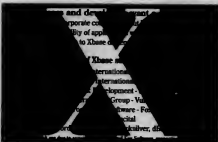
month, calls for an Xbase language committee with the authority to wield together the many variants of the language. Similar ANSI committees, comprising users, vendors and academics, already have wide-ranging authority over languages such as Cobol, Fortran and C.

Standard schedule

According to Schnapp, members of the ANSI X3 committee will vote on the proposal to authorize an Xbase standards group by mid-July. Its initial meeting could be held as early as mid-September, and its first draft of an Xbase standard could arrive as early as the fourth quarter of 1993, he said.

Despite the year-long timetable, corporate developers have found that the proposal is producing early results. "It's eliminated question marks around the viability" of Xbase database development, Grah said.

Continued on page 71



N.Y.-based developer and chief author of the proposal to create an ANSI Xbase language committee, said that a formal Xbase language will be "a stabilizing in-

Software, Inc.'s FoxPro now contends with divergent implementations of the language.

The proposal, submitted to the ANSI X3 chairman late last

Oracle release surprises users

BY JEAN S. BOZMAN
CI/DPW

Oracle Corp.'s decision to ship a "developer's release" of Oracle Version 7.0 to users and software developers this month caught many users by surprise. Most had reportedly expected to wait for a formal announcement of the product on June 15, with eventual delivery of the production version in the fall. Now, the prospect of having all of Version 7.0's distributed database features available for experimentation and prototyping right away has users excited, according to recent interviews.

"They're giving people a chance to taste the code," said Michael Abbey, president of the worldwide Affinity user group, which holds quarterly meetings with top Oracle executives. "I think a lot of people are going to order it, if only to keep up with their peers."

Abbey, a database administrator at the Auditor General of Canada's office in Ottawa, said it will take four to six weeks for him to prototype some Unix applications running on a Hewlett-Packard Co. HP 9000.

"Most people want to get their hands on Version 7.0," agreed Warren Capps, president of the Mid-Atlantic Oracle Users Group in Alexandria, Va. "They seem to be willing to work with

the inconsistencies, if there are any, because Oracle's being very clear to say this is for people who intend to put applications into production six months from now."

A letter in the developer's kit warns users not to treat it as production code, Oracle said.

Procedures triggers

One of the first things users will want to try, Abbey said, is to write the Version 7.0 "triggers" that will allow database applications to start up specific procedures stored in the relational database. Many users have held off trying to write application code, fearing they would guess incorrectly at the exact methodology, he said. Now, they know that Oracle recommends using SQL Forms 3.0 to write Version 7.0 application code.

A full set of Version 7.0 documentation is included with the developer's release. "This is the first time the user community has had the opportunity to see the documentation," Abbey said. "A lot of people are going to use it as a report card, to see whether Oracle delivered on its promise."

Among Version 7.0's new features are two-phase commit, security "roles" for workgroups, referential integrity, triggers and stored procedures. Members of the International

Users Group (IOUG), some of whom have seen beta copies, agreed with Oracle developers that no more "Clean One" bugs remain that would crash a developer's copy of the Version 7.0 system. An expanded beta-test program will track bugs while Oracle's users and developers begin to work with Version 7.0.

Dale Lowery, president of Oracle User Resource, said users were told production copies will ship this fall.

IOUG President Michael Corey said Oracle wants to prevent a repeat of the flawed rollout of Version 6.0, which had bugs in its initial 1989 release. However, extensive testing convinced Corey that it was safe to release Version 7.0 code to the public, said Corey, who is vice president at Database Technology, Inc. in Boston.

No holding back

Oracle Version 7.0 will be offered, free of charge, to licensed users of Oracle Version 6.0 who have paid a maintenance support fee [CW, May 18]. Oracle software tools and all three of Version 7.0's new options for procedural programming, distributed features and parallel server modules will be included in the developer's release package. After Oracle Version 7.0 enters production, users will be charged for these options.

Top executives at the \$1 billion firm approved the early release of a developer's copy of Version 7.0 after it underwent extensive alpha-testing in-house—and yielded good results at 14 beta-test sites worldwide since August 1991, according to Oracle officials. Oracle has used the Version 7.0 relational database at its Redwood City, Calif., data center and to create an internal bug database.

Development of applications can span 12 to 18 months. That is why independent software vendors and value-added resellers said they want code now for 1993 applications. "We see patterns of very tight bug-free code and very satisfied customers," said Tim Nagria, Oracle's senior director for corporate strategy. "That gave us the confidence to make it available to a wide number of developers."

JEAN S. BOZMAN



It's the dawn
of a new age
of corporate
computing!



Data General

PC-based Cobol gets boost

Micro Focus promises easier desktop development of mainframe apps

BY GARRY RAY
OF STAFF

PALO ALTO, Calif. — Cobol supplier Micro Focus, Inc. plans to make it easier for Cobol programmers to design and develop mainframe applications using workstations equipped with DOS, OS/2 and Microsoft Corp.'s Windows.

Last week, the developer announced a new set of products at its Santa Clara, Calif., user conference, including two database extensions to its Cobol

Workbench and two programming environments that emulate the facilities and functions of IBM's IMS and MVS environments.

"They've made the migration off the mainframe very easy for people who don't want to go through the learning curve" required to use personal computer development tools, said Tony Pizarri, director of software research at International Data Corp. in Framingham, Mass.

Bruce Nebel, a business systems development adviser at

American Express Co. and a beta-test user for database extension products, said the software will dramatically reduce the costs of DB2 development and testing. When using traditional on-line systems, he said, "CPU utilization charges go through the roof instantaneously." American Express' planned transition to workstation development will "pay itself off in six months."

On the database front, Micro Focus will offer XDB Option — which includes a subset of Lau-

rel, Mid-based XDB Systems, Inc.'s DB2 Workbench — and the Host Compatibility Option for IBM Database Manager, which will provide DB2 functionality to the OS/2 Database Manager. Both products work in conjunction with the company's Cobol Workbench.

Plenty to persuade Micro Focus officials also announced two emulation environments that will allow development and testing of mainframe applications on workstations. The IMS Production Option will add emulation and testing facilities to the existing IMS Development Option, while the AD/MSF emulates the MVS TSO/ISPF programming environment used by many Cobol developers on PCs.

Micro Focus announced the following products:

- **IMS Production Option Version 2.5.** The extensions allow for testing and execution of IMS Cobol applications on PCs.
- **AD/MSF.** The product supports browsing, editing and ISPF/JCL access and executes MVS JCL, PROCs and utility programs.
- **Host Compatibility Option for IBM Database Manager.** The product provides DB2 development tools and EBCDIC data conversion utilities for IBM's OS/2 Database Manager.
- **XDB Option.** The \$1,250, PC-based DB2 development environment uses a subset of IBM's XDB Workbench and includes XDB's SQL database engine and Cobol precompiler.

KnowledgeWare and IntelliCorp finish link

BY KIM S. NASH
OF STAFF

ATLANTA — Computer-aided software engineering (CASE) company KnowledgeWare, Inc. and former takeover target and artificial intelligence firm IntelliCorp, Inc. announced a bridge to link KnowledgeWare's software design and construction tools with IntelliCorp's Unix-based back-end development products.

When merger talks disintegrated in October, the com-

panies pledged to jointly develop CASE products for their overlapping customer base. Neither firm would reveal how big that joint base is, however.

"This product fulfills that promise," said Pete Privatere, KnowledgeWare's staff vice president for strategic product planning. He added that the company has no current plans for future codevelopment with IntelliCorp.

CaseConnection/ADW is a bridge designed to let users of

KnowledgeWare's Application Development Workbench (ADW) build applications on Unix machines using IntelliCorp's ProKapps, an object-oriented application generator.

The product, which is available immediately starting at \$40,000, includes software and services to translate entity relationship models in Encyclopaedia/ADW, KnowledgeWare's repository, into ProKapps objects and relations. The price increases with the number of models that must be translated.

CaseConnection/ADW allows software engineers who use ADW for design and analysis of mainframe and IBM OS/2-based applications to have a companion CASE solution for Unix development, according to IntelliCorp.

NEW PRODUCTS

Development tools

SmartStar Corp. has announced Version 6.1 of the SmartBuilder rapid application development software for Digital Equipment Corp. VAX/VMS systems.

SmartBuilder interfaces with third-party computer-aided software engineering tools, allowing users to develop a complete data model of a new application. It then transforms the model into a working prototype that can be extended into a complete working application and distributed to end users.

All application elements are stored in a central SmartBuilder repository for maintenance and reuse.

Pricing ranges from \$3,200 to \$36,000.
SmartStar
1280 Crestona Drive
Goleta, Calif. 93116
(805) 685-8000

Bohland International, Inc. has chosen ProtoView Development Corp. to develop an interface design and code generation tool for the C++ ObjectWindows library. Version 2.1 is based on

the company's existing ProTogen computer-aided software engineering tool and was designed for easier application development within the leading C++ development environment.

ProtoGen 2.1 also features code generation for ANSI C, projects file generation for Borland's custom-coded DLL and generates code to access these controls.

According to the company, users can create menus of any size and complexity, and menu templates can be saved and used again in other applications.

ProtoGen 2.1 costs \$49.95.
ProtoView Development
353 Georges Road
Dorset, N.J. 08810
(908) 359-8588

Procase Corp. has added support for Hewlett-Packard Co. HP Apollo 9000 Series 700 workstations to the Procase Smart-system software development environment.

The product lets users re-engineer C language code for porting to new platforms and maintaining and enhancing applications. It consists of five modules

built around an object-oriented database. SmartSystem also provides multiuser capabilities including version control and function-level locking.

Pricing starts at \$2,000 per module.

Procase
Suite 100
3130 De La Cruz Blvd.
Santa Clara, Calif. 95054
(408) 727-0714

Altays Facade, a tool kit for Aldus FreeHand Versions 3.0 or 3.1.

The product furnishes developers with a set of software routines that provide manipulation to Aldus FreeHand documents. Users can interact directly with Aldus FreeHand documents to write stand-alone applications for solving complex graphic design as well as publishing and printing needs.

The product has the ability to write applications to spell-check an Aldus FreeHand document, manipulate objects, substitute fonts, swap colors or report on placed graphics.

Facade is available on both Apple Computer, Inc. Macintosh and personal computer platforms.

Altays Facade costs \$300.

Altays
269 W. Renner Road
Richardson, Texas 75080
(214) 680-2060

Computer-aided software engineering

System Software Associates, Inc. has announced enhancements to its AS/SET line of computer-aided software engineering products for the IBM Application System/400 platform.

AS/SET Version 2.1 has more than 30 new features, the company reported, including new code regeneration and interactive prototyping facilities, an expanded repository of design definitions and SQL or native data access web generation.

The AS/SET VWS option runs on intelligent instrumentation attached to the AS/400.

Pricing for the development kernel runs from \$35,000 to \$100,000; the workstation option costs \$5,000 per workstation license per year.
System Software Associates
500 W. Madison
Chicago, Ill. 60661
(312) 641-2900

Xbase plan called a user victory

CONTINUED FROM PAGE 60

Previously, he explained, IS managers had been concerned about issues such as application maintenance and programmer training costs, neither of which had been predictable with the different implementations of the Xbase language.

John Hoffman, broadcast operations software and systems designer at NBC in New York, said that "there has been resistance simply because [Xbase] is not a standard."

For Groh, the proposal produced immediate results. "In the past, we spent three to four weeks just to overcome" IS objections about using RexPro to create a corporate application. By citing the nascent Xbase standard, IS managers tentatively accepted Groh's proposal to

THERE'S TREMENDOUS leverage in having people know the same language."

ADAM GREEN
"THE GREEN LETTER"

use the Xbase compiler "in 15 minutes," he said.

A variety of Xbase developer organizations and vendors have supported Schnapp's proposal, he said. New York's Professional Association of Database Developers and the Association of Database Developers in San Francisco recently endorsed the move. Street predicted that "if all goes well, the [ADMA] board will appoint someone to the ANSI committee."

Longtime members of the Xbase community remained divided about a formal ANSI standard. On the plus side, "it's an inevitable step in the maturing of Xbase," said Adam Green, an Xbase authority in Boston and publisher of "The Green Letter," a newsletter for developers. "There's tremendous leverage in having people know the same language."

Yet Bob Byers, a partner at the Mountain, Calif.-based Emerald Bay Group and a longtime consultant to the former Ashton-Tate Corp., warned that "standardization can impede progress." Byers said he was concerned that Microsoft Corp. and Borland will unduly influence the committee, and he hoped that "we can stand on each other's shoulders rather than each other's toes."

The IEFTM works. For Aetna. For Rhône-Poulenc Rorer.

The success of Texas Instruments I-CASE product is proven—in the field.

There is an integrated CASE product that works. It works now...and it works well.

The IEFTM, or Information Engineering FacilityTM, is in use now by successful companies, large and small, all over the world.

Major gains in productivity, quality, and maintainability.

Productivity gains in initial development are hard to measure, but reports of 2-to-1 improvements are fairly common—and some go as high as 5-to-1.

Quality improvements are dramatic. Users are getting more of what they need to run their businesses. Systems get up and running easier and faster.

As for maintenance, a Gartner Group study showed that, even back in 1990, more than 80% of IEF developers were getting gains of from 2-to-1 to 10-to-1.

Now, develop on PC and generate for DEC/VMS, UNIX. TANDEM, WINDOWS available soon.

The IEF has generated applications for IBM mainframe

environments (MVS/DB2 under TSO, IMS/DC and CICS) since early 1988. Now you can develop systems in OS/2 and automatically generate for DEC/VMS and some UNIX platforms. TANDEM, Microsoft® WINDOWS, and more UNIX will be available soon.

Developers give IEF highest rating in COMPUTERWORLD.

COMPUTERWORLD magazine's "buyer's scorecard" showed that developers ranked the IEF first among all I-CASE products in the study, particularly in the areas of application quality, programmer productivity, and value for the dollar.

New tutorial provides very fast, very friendly IEF training.

We believe our new Rapid Development Tutorial is a breakthrough in CASE training. We gave it the broadest possible beta test—more than 100 companies participated. Developers were able to learn to build systems with the IEF more quickly

than ever before—some in as few as five days!

Special "Starter Kit" offer combines new tutorial and full-capability PC toolsets.

The new IEF Starter Kit will give you everything you need to start building systems with I-CASE on your OS/2 PC.

Along with the tutorial, the kit includes our standard OS/2 PC analysis, design and construction toolsets as well as testing and code generation in C. (A COBOL compiler is optional and priced separately.) There's also 90 days of "hot-line" support.

The kit is priced at \$10,000 (limit one per customer company). That's about one-half the regular cost of the toolsets.

If you're not convinced that the IEF can work for you, here's a chance to see for yourself—at a special low price and (with the new tutorial) in a very short time.

To order an IEF Starter Kit, or for more information, call 800-527-3500.

Government purchasers, please reference GSA #GS00K92AGS5530

 **TEXAS
INSTRUMENTS**

Speed without risk

BMC Software's utilities for DB2®



Real speed for real data

More DB2 production environments choose BMC's utilities over those from any other third-party vendor. The reason is speed without risk. BMC's utilities are the fastest available for DB2. And at BMC, we achieve high speed without placing your corporate data in danger.

BMC's utilities are designed to meet both your short- and long-term needs. They provide the speed and integrity you need for whatever size and type of data you have today and plan to have in the future.

Selecting the best

Not all utilities are created equal. Make sure you evaluate the following:

- Elapsed time — You need to handle more data in less time. Can you afford a vendor that won't meet your batch window requirements?
- Ensured integrity — Some products have integrity gaps. Can you afford the exposure?

- Longevity — Not all products can efficiently handle large objects. Can you afford a product that you will outgrow in 24 to 36 months?
- Flexibility — Not all products support all DB2 object types and multi-volume data sets. Can you afford to let a third-party vendor impose limitations on your design?

There's only one sure way to measure the effectiveness of any utility — trial it on your own data. For a no-obligation 30-Day-Plus Free Trial, or for more information on our utilities for DB2, call 713 240-8800 or **1 800 841-2031**.

BMC SOFTWARE

The Experience. The Technology. The Future.

BMC Software international offices are located in Australia, Canada, Denmark, France, Germany, Italy, Japan, Netherlands, Spain and the United Kingdom. DB2 is a registered trademark of IBM Corp. © 1992 BMC Software, Inc. All rights reserved.

EXECUTIVE REPORT

ALIGNING IS

Sync or swim

IS groups that don't hop on board with company business plans may find themselves adrift and far from shore



Fleet/Norstar's Zucchini: Skill at juggling technology and business goals helped make him one of the best-paid CIOs in the country

BY CANDEE WILDE

Michael Zucchini is puzzled. A 25-year computing veteran, he can't fathom the ongoing debate over whether business or technical matters is more important for keeping information systems in step with corporate goals. "You need both," says Zucchini, chief information officer at Fleet/Norstar Financial Group, Inc.

His skill at consolidating bank computer operations, among other areas, has helped drive Providence, R.I.-based Fleet/Norstar's aggressive acquisition strategy. Zucchini's latest project: helping absorb the recently acquired Bank of New England and halving its \$180 million IS budget over the next 18 months.

Sadly, Zucchini is a rarity in business today: an IS ambassador who makes synchronization between IS and business look simple.

Despite years of being constantly badgered to "learn the business" and become more mainstream, some IS shops remain marginalized and semirelevant. For many, that could spell big trouble, especially during a recession. Top corporate honchos continue to demand that IS deliver or face

severe cutbacks and possibly outsourcing. Indeed, IS groups is not unacquainted with whispered tales of technology chiefs whose organizations strayed further and further from the corporate path before finally crashing by the wayside.

Studies confirm that turnover of top IS personnel is rising. IS chiefs who can't deliver, says Douglas Brockway, a principal at Nolan, Norton & Co. in Boston, are being "invited to do their work somewhere else."

Conversely, those in IS who succeed in bridging the gap can be handsomely rewarded: For example, Zucchini's annual salary last year topped \$650,000, making him one of the best-paid CIOs in the country. He also earned the title of executive vice president.

Same old, same old

The challenge of synchronizing technology and business dates back to the 1970s, consultants say, when businesses began pouring more money into technology. "It's always been critical, and it's always been a problem, and it always will be a problem," says John Kinners, director at The Index Foundation.

The London-based unit of CSC Index, Inc. recently opened U.S. operations in Cambridge, Mass., and has published a research report entitled "Strategic Alignment."

But pressure tends to mount, consultants say, when new technology catches on — first minicomputers, then personal computers and local-area networks — and during tougher economic times.

So the average senior manager today surveys millions and perhaps billions in IS investments in a time of tightly corseted budgets, Brockway says, and "still doesn't see where the bottom line of the competitiveness of the company has been fundamentally changed."

According to "The '92 CEO/CIO Survey" by Booz Allen & Hamilton, Inc. in New York, few IS departments are having the desired impact on competitiveness, customer service and profitability. The result: Top management goes gunning for a money-wielding IS group that doesn't appear to be pulling with the rest of the corporate team. Given the potentially gruesome results for both IS and the business, it's small wonder that three recent surveys of chief executive officers and CIOs found that aligning technology and corporate goals is the most critical concern facing IS groups.

A survey by CSC Index found that "aligning IS and corporate goals" was the top issue for 566 IS executives polled in North America and Europe.

In a survey of nearly 350 organizations, Continued on page 77



Sync or Swim

KEY POINTS

Several national surveys show that synchronizing technology and business remains a top priority for CEOs and CIOs.

Despite the importance of management vision, executives still do a poor job of aligning with business goals.

Internal politics, fuzzy management vision, executive squabbling and time pressures all hamper efforts to synchronize.

IS managers use a wide range of tactics to better align, depending on style.

Many consulting firms are offering services aimed at better coordinating technology and corporate goals.

User stories: Fleet/Norstar, Echlin, Merchants Distributors, Trans Ocean, Hulse Oil, Rowan Communication, city of Dallas and Atlantic Mutual. Pages 77, 78 and 79.

QUOTEABLE

"Management doesn't go around and pat everyone on the back and say, 'Gee, please line up with our business plan.'"

Richard Roth
Echlin Corp.

Wilde is a free-lance writer based in Easton, Conn.

SHOW US YOUR OBJECTS

Announcing the 1992 Computerworld "Object Application Awards"

Think your objects look pretty good?
Then show them off by entering
Computerworld's Object-oriented
Application Awards Competition.

Object-oriented technology.

It's on the cutting edge and Computerworld's Object Application Awards showcase those individuals bold enough to develop the applications for it. The winners will be announced at the Sheraton Palace Hotel in San Francisco on Tuesday, July 21 (during the Object World '92 show, July 21-23).

Call today for entry.

Your entry should be an internally developed custom application currently in use (not a prototype) and not for resale. It should be either an entirely new application, a modification of an off-the-shelf application, or an object-based, front-end for a host application.



This object will be awarded for each of these five object-oriented applications.

1. Best implementation of a distributed application using object-oriented tools.
2. Best implementation of a "reusable" development environment for company deployment.
3. Best "object-based" application developed using NON object-oriented tools.
4. Best "cost-saving" implementation using an object approach.
5. Best use of object technology within an enterprise or large systems environment.

To request your official entry kit*, call or fax: William Hoffman

Computerworld's Object Application Awards
c/o Object Management Group
492 Old Connecticut Path
Framingham, MA 01701
Telephone: (508) 820-4300
FAX: (508) 820-4303

**DEADLINE FOR
ENTRIES IS
MIDNIGHT (EST),
MAY 29, 1992**



Sponsored by:

COMPUTERWORLD
In partnership with

* The Computerworld Object Application Awards entry kit contains all details, rules and qualifications for this contest. Contest is void where prohibited by law. No purchase necessary.
© 1992 Computerworld, 975 Cochituate Road, Framingham, MA 01701-0171. Tel: (508) 879-0700, Fax: (508) 879-0445.



YES, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$38.95* per year — a savings of \$9.00 off the basic subscription price.

First Name	MI	Last Name
Title	Company	
Address		
City	State	Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renewal Basic Rate: \$48 per year

COMPUTERWORLD

YES, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$38.95* per year — a savings of \$9.00 off the basic subscription price.

First Name	MI	Last Name
Title	Company	
Address		
City	State	Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Price: \$40 per year
U.S. Only: Canada \$74.97, Central/South America \$130, Europe \$195, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.
Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. **MARKETING INDUSTRY** (Circle one)
- 21 Manufacturers (other than computer)
 - 22 Process/Manufacture/Real Estate
 - 30 Industrial/Laboratory
 - 40 Wholesale/Retail Trade
 - 41 Business Services (except DP)
 - 42 Government - State/Federal/Local
 - 43 Communications Systems/Public Utilities/Transportation
 - 70 Mining/Construction/Manufacturing/Int'l Merchandise of Commerce
 - 71 Computer-Related Systems or Peripherals
 - 80 System Integrators, M/Us, Computer Related Business, Software Planning & Consulting Services
 - 90 Consulting/Professional/Executive/Other
 - 99 Other
- (Please specify)

- [illegible]

3. **INVOLVEMENT** (Circle all that apply)
Please indicate your involvement in ISAMB/CP
- A. Management/Supervisor ISAMB/CP Staff
 - B. Recruitment/Specify IS Equipment
 - C. Purchase IS Equipment
 - D. End-user of IS Equipment
 - E. Site Installation

E4221-0



YES, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$38.95* per year — a savings of \$9.00 off the basic subscription price.

First Name	MI	Last Name
Title	Company	
Address		
City	State	Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Price: \$40 per year
U.S. Only: Canada \$74.97, Central/South America \$130, Europe \$195, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.
Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS/INDUSTRY (Circle one)
 20. Manufacture (other than Computer)
 21. Finance/Insurance/Real Estate
 22. Medicine/Healthcare
 23. Wholesale/Retail Trade
 24. Business Services (other than DP)
 25. Government - State/Federal/Local
 26. Communications Systems/Postal
 27. Utilities/Transportation
 28. Mining/Construction/Transportation/Other/Not Specified
 2. Structures of Computers
 30. Mainframe Computer, System or Peripheral
 31. System Integration, MPE, Computer Service Bureau, Software Planning & Consulting Service
 32. Computer/Peripheral Dealer/Distributor/Reseller
 33. Other _____
- (Please continue)

- 2. TITLE/PRECTION (Only one)**
 a. **Executive**
 Chief Information Officer/Vice President/
 Asst. VP/Associate Manager
 b. **Senior**
 21st Century Learning Center
 Chief of Staff/ Training Planning, Admin. Svcs.,
 Comm. Network Svcs., Libr. Syst., PC Spt.
 c. **Mid**
 Sr. Asst. Development Svcs.
 Architect
 d. **Programmer/Management, Software**
 e. **Engineering, Scientific, R&D, Tech. Mg.**
 f. **By Title, Integrative/VP/Consulting**
 g. **Other**
 1. President, Chief VP
 Vice President, Asst. VP
 Treasurer, Director
 2. Treasurer Officer
- 3. EMPLOYMENT INFORMATION**
 a. **State & Mfg. Management**
 b. **Health, Legal, Accounting**
 c. **OTHER PERSONNEL MANAGEMENT**
 d. **Education, Journalism, Literature, Sciences**

3. **IS INVOLVEMENT?** (Circle all that apply)
Please indicate your involvement in **SHIELD-CP**
- A. Manage/Supervise **SHIELD-CP** Staff
 - B. Recommend/Specify **SH** Equipment
 - C. Purchase **SH** Equipment
 - D. End-user of **SH** Equipment
 - E. No Involvement

E4221-0



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



If IS groups don't hop on board, they may find themselves adrift

CONTINUED FROM PAGE 75

Howard Rubin Associates, Inc. in Lexington, Mass., found four themes producing business value through technology, maximizing the yield of IS activities, harnessing the benefits of improved IS effectiveness and managing the bottom line.

Eschlin said those done

While making sure that IS and business are pointing in the same direction sounds like the simplest, most logical thing in the world, IS managers and consultants agree it's far easier said than done (see chart).

In fact, The Index Foundation's Kinear says, in most organizations, true alignment is probably unattainable. "People are never going to achieve perfection. Business is changing too fast." Moreover, a huge number of legacy systems and differing approaches required by re-engineering (as opposed to simply automating) further complicate matters.

Despite such obstacles, Kinear and others agree that striving to better link technology and business remains a worthy, necessary goal.

Different IS chiefs have adopted tactics based on their own styles and organizations. At Fleet, for instance, Zucchini sees his goal not so much to align IS with corporate strategy as to actually help develop and drive that strategy — the pinnacle of IS achievement.

By recognizing a business issue — in this case, overcapacity in the banking industry that would force cutbacks and extensive consolidation — Zucchini was able to apply his technical know-how and come up with a solution that reduced expenses and improved profitability.

Since 1988, Fleet has consolidated 12 data centers into one and 20 back offices into four. "I don't call it downsizing. This is intelligent re-engineering of the process," Zucchini says.

Zucchini says there's nothing magic about his approach: He relies on the usual mix of formal meetings with department heads, informal lunches and dinners. Put simply, he says, IS executives "need exposure [within the company]. People have to teach you the business."

Calvin Shilling, vice president of IS at

Merchants Distributors, Inc. in Hickory, N.C., also takes a personal, off-court approach to making sure he's in sync. He likes to work out at a local health club with co-workers to keep a finger on the corporate pulse. "You don't talk about new technologies; you talk about what the business is doing, what the competition is doing," he explains. "You ask, 'If you could get something that would really help you do your job, what would it be?'" The answer probably won't be the latest technology, he says.

Shilling is keen on positioning his group as just another team player. "IS has tended to differentiate itself from other parts of the organization, and we shouldn't do that. We're just another part trying to get the job done."

Eschlin: IS must keep watch

While technologists can only be as solid as the boat they're riding in, many IS directors stress that it's ultimately the responsibility of IS to make sure money and time are well-targeted. "Management doesn't go around and get everyone on the back and say, 'Gee, please line up with our business plan,'" says Richard Hock, director of MIS at Echlin Corp. in Bramford, Conn.

At Echlin, each functional department



Source: David Allen & Hamilton, Inc.

CW Chart: Tom Ichniowski

ate whether the division is moving in the right direction — that is, in step with the company. "We're entrepreneurial in the sense that we are expected to support the company in some way. If you don't show what you're worth, they eliminate you," he says.

Though most approaches are commonsense and fairly easy to do, business and technology still have not gotten in sync at many companies. At The Index Foundation gathering this month in Boston, for example, more than half of the 150 top IS executives ranked themselves in only the earliest stages of synchronization, according to Kinear.

Boat Allen blames current methods of managing IS, which ironically are seen as preventing the businesses from carrying out their main purpose: making money.

"It is a model that essentially operates as a utility: large-scale but not flexible, not creative," explains Steve Perkins, a vice president at the New York-based consultancy.

"CIOs need to be seen as a catalyst for business results. They need to talk and act that way," Perkins explains. "I don't think they do that now."

Are you on board?

Here are signs that your IS organization is aligned with your firm, Howard Rubin Associates says:

- You know, understand and can articulate the business case for every piece of work you do.
- You focus on projects that improve internal business processes and the organization's ability to innovate.
- You measure as a business would.
- You take every opportunity to position yourself "above the line" in the corporate value chain.

prepares an annual business plan in support of the broad corporate strategy. Hock asks members of the IS department to list key issues for the coming three years. They must also list major IS expenditures planned for the next year and present an inventory of installed hardware.

With this information, Hock can evaluate

New course bridges technology gap

Microsoft Corp. has unveiled a new three-day course aimed at bringing business managers into the technology planning process. "New Architectures for Enterprise Computing" is offered in Washington, D.C. (June 15-17) and in Seattle (July 13-15). Call (310) 394-8305.

CSC Index, Inc. has opened a U.S. office of The Index Foundation, an international research service. The service provides reports, conferences and meetings. Call (617) 492-1500.

ARTICLES

"Accelerating Front Line Change"

Richard Heygate
McKinsey Quarterly
No. 2, 1992
(212) 446-8033

"Core Process Redesign"
Robert B. Kaplan and Laura Mordock
McKinsey Quarterly
No. 2, 1991
(212) 446-8033

REPORTS

"The 1992 CEO/CIO Survey: A Prescription for IS Effectiveness in the '90s"
Boyd Allen & Hamilton, Inc.
(212) 697-1900

"The Politics of Information, Understanding and Redesigning IS Processes"
Ernst & Young
(617) 742-2500

"Workgroup Technology: Tying Technology to Business Objectives"
IDC white paper
(508) 872-8200

BOOK

The Information Mosaic
Sharon M. McKinnon and
William J. Bruns Jr.
Harvard Business School Press
March 1992



But the problem does not lie just with CIOs. Technical people, Perkins says, must be allowed to try — and fail — in the same way business people do.

Consultants' small business

The clamor to better link business and technology has led to a scramble by consulting firms eager to advance their own solutions. CSC Index, for example, uses a four-step approach, culminating in re-engineered business processes, as the best and most effective approach. McKinsey & Co. promotes "core process redesign."

Boat Allen has developed a method of switching IS from what it describes as a "service station" function to a "power station."

Essentially, this new model involves two components. First is a management function that provides low-cost, high-volume information services to the company. Second is a group of "self-starters" who set and solve new problems with the business people by using intelligent technology to increase market share, improve customer service or develop new products, Perkins explains.

Using outsiders can help unjam a company, says Peter Abene, director of corporate market analysis at Electronic Data Systems Corp. in Dallas. "Sometimes it takes a fresh viewpoint to get them on the right track," he says.

Whatever the approach, nothing short of a revolution in IS management style is needed, says Howard Rubin, CEO of Howard Rubin Associates.

Besides understanding the business, Rubin recommends that companies develop technical scorecards to measure the performance of the IS function and tie that scorecard into the whole business. Measurable items must suit the business, but some broad possibilities include the following: rankings against industry peers, ability to deliver commitments, investment in productivity tools such as computer-aided software engineering and proper selection projects.

The best CIOs, Rubin concludes, must "walk the border" between business and technology. The worst CIOs, it might be added, run the risk of stepping too far off the path and drowning in the abyss. ■

Stayin' aligned: Five tales

Ways of staying in step with business goals differ as much as individual companies. Smart IS managers are always looking out for new tips and techniques. *Computerworld* free-lancer Barbara Francett asked six diverse organizations for their approaches. Their stories follow.

LAURIE RAUCH

BOWATER COMMUNICATION PAPER, INC.

Information engineering and CASE help the Moline, Ill. firm involve business units in application development. An eight-member executive committee, including IS, sets business goals and strategies. Informal questioning may be supplemented by a Total Quality Management program.

When Bowater Communication Papers, Inc. (BCP) sprang from two corporations merged six years ago, information systems management knew that technology and corporate goals would have to get in step quickly, or the new firm would run the risk of crumpling up like a ball of paper.

The four groups involved after the 1986 merger with Star Forms, Inc. — two IS departments and two corporate staffs — were hardly similar. "Goals and strategies, business rules and applications were drastically different," recalls Laurie Rauch, vice president of IS at BCP. Today, the merged company, which makes and sells computer and printer paper, is a \$300 million unit of Darien, Conn.-based Bowater, Inc.

The first step, Rauch says, was to merge the two firms' data centers in Moline, Ill. "Our systems focus had to change with the times," she explains.

During the conversion, IS discovered that the data was similar, but things soon got tricky.

Choosing targets

Aligning applications with the business goals of the newly united company became a top priority, Rauch says. The problem, she adds, was identifying goals.

"Going through a steering committee would not have been effective because of the bipartisan politics of the two companies involved," Rauch explains. She found herself rebuilding applications for two different companies with mirror-image databases. "It was not," she recalls, "a productive approach."

So Rauch began looking for a way to help IS more easily develop projects that could support both groups. In 1989, BCP began to apply a methodology marketed by Information Engineering Systems Corp. in Alexandria, Va. The vendor's IE:Expert computer-aided software engineering (CASE) tool was also employed.

In theory, information engineering translates mission statements, goals, critical success factors and strategies into data, which is then clustered into functional areas. In practice, the company's eight-member executive committee, including Rauch, sets business goals and identifies critical success factors and strategies to support them.

The business plan divides into functional areas such as product development, marketing, manufacturing, sales, finance and human resources. A team of business and application project leaders is selected. Members then develop tactical, operational and process models.

"Based on business priorities assigned to those strategies, we can then look at the data model to see which are supported by current systems and which need support," Rauch explains.

Information engineering lets IS facilitate business planning and document business plans, she says.

"We used to use the traditional approach of interviewing end users to develop system specifications," she says. "But it wasn't effective in our new environment." Today, staff brainstorm a single answer to each problem.

Drastic solution

A good example is BCP's new Unix-based, client/server approach to systems designed to promote better information sharing between groups. Before the data centers were consolidated, BCP ran two Hewlett-Packard Co. 3000s with HP's Turbo Image database.

The firm has since switched to four distributed HP 9000s — one for every two BCP plants — under HP running Sybase, Inc.'s Sybase software.

"Making such a drastic change from the way we used to work was risky and costly," Rauch says. "But the project team approach is worth it because it allows us to directly tie development costs to specific projects and see a business payback."

Implementing project teams is a long-term process that requires training workshops for everyone at all levels, Rauch cautions. And making sure IS stays aligned with the business often means asking tough questions of both groups: Is the overall vision right? Are we supporting the strategic objectives in a timely manner? Are people learning? Is quality improving?

Rauch would like to extend that informal assessment technique to a more formal, quantitative assessment method and is looking into Total Quality Management as one possibility. In the meantime, BCP uses decreasing error rates and increasing productivity as measures of the success of the project team approach.

"We're being more responsive," she says. "Our new being more responsive in supporting new strategies, such as branding a new product or changing products. But the ultimate test will be if we can be more cost-competitive in the marketplace. It's too soon to tell that yet."

BRIAN ANDERSON

TRANS OCEAN LTD.

Local and regional IS offices serve as user interfaces to remote field offices. Extensive prototyping helps ensure applications are useful. Communications with internal and outside customers are minimized. IS sometimes does end-user jobs to gain insight, and the IS director reports directly to the CEO.

Trans Ocean LTC may call San Bruno, Calif., home. But as one of the world's largest shipping container leasing companies, it must ship information and products to business units and users around the globe.

The \$150 million company asks IS to create uniform systems for end users in 20



Trans Ocean's Anderson: "You can't let users drive the needs of the company, and you can't sit in the glass room, either."

offices in major world ports. Moreover, differences in culture, language, law and currency make harmonizing with business even tougher, says Brian Anderson, director of IS.

Trans Ocean has targeted automated decision-making as a way to achieve uniformity. Anderson says this approach depends on a solid IS understanding of business needs. "If we don't understand the decision criteria for a given worker in a given area, we can't provide the appropriate information," he explains. "If the decision criteria are wrong, the decisions will be wrong."

For instance, currency exchange rates affect whether containers in need of repair are fixed or sold. In the past, flaws in Trans Ocean's currency conversion system caused containers to be sold when it would have been more cost-effective to fix them, and vice versa.

"The system makes its decision based on the currency and exchange rates for a particular date," Anderson says. Unfortunately, IS had chosen one date as a base and the repair depot another. It turned out the depots were right, and the system

was altered accordingly.

Other decisions are often based on input from several functional areas, such as sales and marketing, equipment control, management or repair and maintenance. "It's up to IS to mold diverse group requirements," he says. "We have to understand each functional area."

New face for IS

This recognition has led to new paradigms and structural changes for IS. "You can't let users drive the needs of the company, and you can't sit in the glass room, either," Anderson says. "The top IS person needs to be involved in the decision-making process and understand where the company is going. You have to be in the boardroom and on the front lines."

The former is accomplished by reporting directly to the chief executive officer, the latter by closer contact with end users.

IS supports field sales and marketing offices. A local or regional staff maintains the networks and acts as a user liaison. User needs are relayed to home office systems developers, where the development process has also changed.

"In the past, we sized things up, decided what people needed and gave it to them," Anderson says. "Now we do more prototyping and interact more with end users to show them what we're doing before it's codified. This improves our chances of creating a system that people want and need."

IS effectiveness is gauged by comparing each application developed to the original objectives. Projected vs. actual savings, correctly captured data and specific goals, such as improved communication with internal and external customers, are also measured.

Informally, Anderson tries to keep on track with business goals by keeping in touch with end users. "We sit and work with them. We try to make their decisions based on the information they get. We make sure they're getting what they've paid for," he says.

This means a new role for IS. "Systems aren't an end to themselves," Anderson says.

ARTHUR HOLLERS

CITY OF BOSTON

Analysis in each container department is coordinated with procurement to ensure requirements. The IS director and city officials also get together regularly.

Think it's a little important for public sector IS groups to stay tuned in? Arthur Hollers will set you straight.

Even though a municipality can't be swallowed up by a hungry takeover artist, a city IS department can be replaced by savvy end users or an outsourcer. So two-way dialogue is key.

"We can't dictate to our customers

because they won't accept it. We must integrate their needs with our plans," says Hollers, data operations manager in the IS department for the city of Dallas. "If we don't, they'll fulfill their needs elsewhere."

The customers of Dallas' 185-member IS staff are numerous and varied: fire, police, finance, water, streets and sanitation departments and the public library. As in commercial business, each has its own unique set of needs.

And Dallas never sleeps: City employees operate more than 2,000 terminals around the clock. For IS — including the communications, telephone and radio and programming and operations groups — this means providing nonstop availability from the city's Amdahl Corp. 350A and IBM 3004 and 4381 systems.

Close and constant communication, from the bottom up and the top down, with customer departments is key to meeting those needs, Hollers says.

"Analysts in each customer department meet regularly with our programers to convey their requirements. Our director also meets with their directors to provide direction from the top," he says. IS also sends out annual surveys to customer departments. Hollers says, "It's a way to check how we're doing and ask for suggestions for improvement."

Identifying customer needs, however

WE CAN'T DICTATE to our customers because they won't accept it. We must integrate their needs with our plans."

ARTHUR HOLLERS
CITY OF DALLAS

accurately, is only half the task. These needs must then be fulfilled within the limits of a tight budget. The city has been through six years of budget shortfalls in Dallas. "We may need new technology to best service a customer, but the budget may force us to make do with old equipment until next year," Hollers says.

Show, don't tell, benefits

Dallas' IS group contends with this dilemma in two ways. One is to free up funds by demonstrating to the budget committee the cost benefits of a new technology, such as replacing a reel tape drive system with a cartridge-based one that eliminates two workers-years. The other is to emphasize technologies that help preserve life and property.

For instance, an imaging system for the police department and a map tracking system for the city's ambulances and fire trucks dramatically illustrate the value of imaging IS and customer goals.

"When accidents happen, the image system lets police retrieve records from the mainframe faster," Hollers explains. "By integrating 911 service with our computer center, a dispatcher can bring up information on screen by hitting a single key."

Those capabilities, combined with the mapping information provided to vehicles via radio and a microwave network, get rescue vehicles to the scene faster. The benefits are simple and undeniable, according to Hollers. "Speed equals lives."

For the project, the city won the 1990 Partners in Leadership Award from the Society for Information Management.

LES BROUGH

As the oil and gas industry's premier, widespread catalyst, downriggers and workovers are also being developed with an outside consultant. Users will have to be involved in going out and finding the best packages," Brough says.

A tight bond between technology and business is never more crucial, perhaps, than when a company and industry are in dire straits. That's the case for Home Oil Co. in Calgary, Alberta. For Les Brough, manager of IS at the oil and gas exploration company, there is no choice but to focus IS on the company's most basic needs.

Years of oil and gas oversupply have prompted widespread cutbacks, downsizings and reorganizations among companies in the \$6 billion industry. Home Oil also carries a large debt, a painful souvenir of its separation last year from Interprovincial Pipeline, its former parent. The split caused a major shift in short-term business goals.

"Cash flow is now earmarked for debt reduction rather than exploration," Brough says. "It will take us three years to put our debt/equity ratio back in balance. We've had to look at strategies carefully to survive."

Survival tactics

As a result, \$240 million Home Oil has cut its staff, including IS, by 25%. Another 15% will be cut in the next three years, paring IS down to about 40 workers.

"A year ago, we went through a planning exercise to respond to what our business would be," Brough says. The IS plan was delivered to — and accepted by — the executive committee last September and passed IS and other staffers two months later.

The plan had five main tenets: ship in-house development, stop maintaining in-house systems, begin to migrate away from the mainframe, use off-the-shelf software and move to open systems.

Brough and his staff met with the client departments to define critical system support. "We explained that we could only do what absolutely had to be done," he says. "We had to start asking hard questions when people made requests."

Home Oil's two Digital Equipment VAXs, a Model 6530 and a Model 3300, have already been replaced with a Prime Computer, Inc. 9750 minicomputer. A Prime 9955 will replace by the fall, and migration away from the Amdahl 5870 mainframe will take place during the next three to four years.

Replacement are IBM RISC System/6000 Uni-Base servers and workstations, as well as Sun Microsystems, Inc. workstations running specialized industry software. Brough says he expects that functionality might suffer.

"It's been a hard sell, but the work we've been used to getting 100% of what they want," he acknowledges. "We've had to explain that if we don't compromise, we won't exist as a business." The support of departmental managers has helped get the message across to workgroups and departments. "We've also published our story in

the company newspaper, and we're running seminars for the systems staff explaining the changes in how IS will operate," Brough says.

End-user workshops are also being developed with an outside consultant. Users will have to be involved in going out and finding the best packages," Brough says.

Nothing stays the same

The changes aren't over yet at Home Oil, either. What was once a hierarchical, vertically organized company is flattening out — eliminating an entire layer of middle management — to a horizontal arrangement of work teams throughout the company, including IS.

Throughout the evolution, communication will be emphasized. "We just participated in informal discussions with other division managers and company vice presidents to check our progress," Brough says. "We'll review our goals again later this summer to make sure we're on track and that people haven't gone off and done something else."

At the same time, Brough says he is looking beyond the next three bare-bones years in hopes of crafting IS and business strategies for better times. He's optimistic that successful exploration strategy and systems to support it lay ahead.

JERRY KUECK

The Charles Machine Works, Inc. keeps in line with business needs by letting users design most of the systems. The payoff: annual productivity gains exceeding \$300,000, according to company officials.

Improved competitiveness is the goal, explains Jerry Kueck, technical support manager at the Perry, Okla., firm, better known for its Dixie Wrench products.

The IS group has begun a program that makes members of each corporate department "functional representatives" who interact regularly with IS.

IS manager Alan Hawkins says these representatives, key clients and customers work to design data and processes that are useful in the part of the business they represent. It works like this: A functional representative first goes through a class in which IS employees teach the fundamentals of data modeling. Some users are trained to help IS design relational database management systems using CA-Menu fourth-generation language and CA-Datcom DBMSs from Computer Associates International, Inc.

The approach, however, isn't always played well with senior managers, who initially felt they had better things to do, Hawkins says. "I had one senior manager tell me during class that it was the biggest waste of time he'd ever seen in his life," he says. "He is now one of the greatest proponents of what we're doing today."

Meetings between IS and representatives typically take place once a month, but during the time of year when the corporate and the IS department plans are being developed, meetings are more frequent.

"Not many companies are doing this, and we can't understand why. It takes a company that is willing to do something radically different," Hawkins says. Support from the company president has been a huge plus in giving the company enough time for Charles to learn and refine the process, he notes.

HARRY WALDRON

Videoconferencing, instant phone calls and faxing have put us in a new world of communication. A 13-member steering committee meets quarterly to evaluate technology projects. A planning guide helps committees monitor and list current and future projects.

At the Atlantic Mutual Cos., geography is no barrier to face-to-face communication.

Even though most of the insurer's key business units are located in Newark, N.J., the firm's IS group works closely with users to coordinate system priorities — even though the group is located in Roseland, Va.

"We meet with users via videoconferencing, supported by frequent phone calls and letters," explains Harry Waldron, applications system manager.

For example, business staffers in New Jersey recently needed to meet with Virginia-based people, including IS staffers, to discuss state reporting guidelines. "We have to change to the new plan by the beginning of next year," Waldron explains. "This is a good way to facilitate planning and keep IS on top of the business goals."

Like other insurers

Like other insurers, 150-year-old Atlantic relies heavily on information to keep its \$750 million property and casualty business running smoothly. A 13-member steering committee — which consists of all the insurer's senior officers — evaluates technology projects quarterly. The status of current projects is reviewed, and new projects are recommended.

"We also regularly produce a planning guide to share projects in progress with the steering committee and IS staff members," Waldron adds.

To Waldron, learning the business means being able to talk shop with other executives. He says he is taking insurance courses and has completed nine out of 10 exams needed for certification in Charter Property Casualty Underwriting.

The result: added business value to applications development. "For example, recently we were rewriting a premium and claims accounting system. The insurance courses I've taken made me aware of data elements we have not captured in the past," Waldron says.

Applications development is divided into groups. Each supports a strategic business unit: commercial lines, personal lines, finance and automated claims processing. "Each group works closely with each business unit to align priorities and maximize throughput," Waldron says.

In the future, IS is hoping that leading-edge technologies such as object orientation and CASE will help developers keep ahead of the business by responding more quickly. "The more our business relies on automation, the more responsive we have to be."

Andersen's Foundation For Cooperative Processing CASE product does what other CASE vendors only promise: designs and generates code for client/server applications.

FOUNDATION - SEPTEMBER 1, 1991

Considering how much has been written about CASE tools for cooperative processing, we thought you would appreciate an executive summary.

ANDERSEN
CONSULTING
Software Products

For the full story on FOUNDATION for Cooperative Processing including case histories, call 1-800-458-8851. Outside the U.S. or Canada, 1-312-507-5161.

Big bad bar code

Two-dimensional bar codes and advances in data collection technology promise to deliver more operational data to decision makers



© Chris Sabado

BY KEVIN R. SHARP

A warehouse operator emerges from the shadows of a packed but deserted warehouse. He approaches the cavernous opening of a waiting tractor-trailer with both hands free, ready for anything. The driver of the truck extends a business card emblazoned with a mysterious two-dimensional checkerboard pattern. The warehouseman stretches out his hand, points his finger at the business card, and a laser beam from the back of his hand extracts the information stored in the checkerboard-printed bill of lading.

The computer on the operator's belt digests the 1,500-character bill of lading and does a quick check through data on back-ordered material. The check confirms that the newly arrived package is No. 553, which is needed for that night's critical shipment. The display on the warehouseman's forearm tells him exactly where to take the badly needed box.

While the scene above may appear a bit melodramatic when compared with the real-

Sharp is a registered electrical engineer, free-lance writer and data collection consultant in Tucson, Ariz. He is also technical editor of *ID Systems Magazine*.

ty of daily operations in a distribution center, the technologies making the scenario possible are not exaggerated. Two-dimensional bar codes, small portable scanners and sophisticated conveyor belt monitors are either currently available or in the final stages of field testing.

Advances in bar code and closely related data collection technologies enable businesses from warehouses to hospitals to chemical processing plants to couple their operations more closely with their operational data.

These advances stem from miniaturization of optics and processing electronics and more densely packed bar-code labeling techniques.

Current bar codes

The mysterious checkerboard bill of lading carried by our fictional delivery driver contains a new, 2-D bar code that promises to pack a lot more data in the same space that current bar codes occupy.

The 1-D bar codes now in use in commercial, retail and industrial applications encode all information along a single line. The thicknesses of the

bars and spaces carry information, while the height of the symbol makes manual scanning easier because the human arm tends to scan a bar code in an arc, not a line.

Exactly what information can be encoded and how it is conveyed along the line varies between different bar-code "syntologies," that is, the languages of bar codes. For example, Code 39, the most common industrial bar code, codes all capital letters, all numbers and some special characters such as dollar signs and decimal points. Each Code 39 symbol consists of a start pattern, a variable number of symbol characters and a stop pattern. Each symbol character consists of five dark bars and four light spaces. Exactly three elements (bars and spaces) are wide; the rest are narrow, which makes every character exactly the same length.

One-dimensional bar codes work fine when the amount of required information transmission is low. This is the case for most "license plate" applications in which the bar code contains an index into a database but the real information is contained elsewhere. For example, a 1-D bar code might encode a purchase order number, while the list of items ordered remains in a database. The purchase order number would be used to access the information.

As the amount of information needed on a bar-code label has risen with application requirements, industries have adopted labeling standards requiring many different bar-code symbols on the same label. The Automotive Industry Action Group labels, for instance, incorporate separate symbols for supplier, part number, destination and other information. When passing along lots of small bits of relatively unrelated information, this technique works fairly well. However, it gets

Continued on page 82



Two-dimensional bar-code labels pack enough data to provide serial number traceability on semiconductor equipment

Continued from page 81

combersome as the symbols pile up.

Many separate bar codes on a label means an operator must perform many separate bar-code scans. It also means either the operator has to scan the data in the correct order, or the data entry software needs to accept the information in any order and sort it out later. Labels more than 6 in. on a side are common.

If a company needs to communicate larger packets of closely related information, such as a shipping manifest, the 1-D architecture breaks down. While it might be theoretically possible to make a label with enough Code 39 symbols to convey a 1,500-character bill of lading, the operator would require almost 100 bar codes, the operator would need to scan each one and not miss any, and some technique would be required to break the message into separate symbols and reconstruct the message after scanning. Packing 100 Code 39 symbols on a label essentially uses the entire surface of the label to convey information.

2-D to the rescue

Two-dimensional bar codes, on the other hand, enable users to pack a lot of information in a small space by stacking a series of independently scannable bar-code lines into a rectangular symbol. Each line contains a portion of the message contained in the block. PDF417, a symbology that will be available by the end of the year, packs an 1,800-character shipping manifest into a square symbol less than 2 in. on a side. Another symbology, Code



The APS 3395 from Symbol Technologies enables workers to track production but keep both hands free. Raising the finger activates a trigger and scans bar code.

tags for applications in which extremely large databases contain very few records needing access at any one time. A medical alert card could contain an entire allergic profile of a patient, accessible by a paramedic in remote areas without access to a central database.

Large direct-mail operations are also experimenting with 2-D codes to help them eliminate the need to support huge databases. These operations often receive demographic information about every person appearing on large mailing lists they purchase. These lists often contain millions of names, each with a few hundred bytes of profile data. A lot of these names are useless, because all the mailing operation cares about is profiles of people who respond to their mailings.

With standard bar codes, the direct-mail companies assign the cards they send out a bar-coded serial number, storing millions of profiles while waiting for re-

sponses to scan the 2-D bar code. Miniature optics, highly integrated semiconductor chip sets and a heightened sense of the importance of ergonomics are giving rise to data collecting and processing personal computers that users were instead of carry.

Typical portable bar-code terminals require one hand to hold the terminal and one to hold and operate the scanner. Loading and tracking a box with these units requires the operator to juggle the terminal, the scanner, holders for each device and the box.

Smaller optics are smoothing out this juggling act. Most handheld terminals now include built-in scanners. With the terminal and scanner as one unit, the operator needs only one holster, and scanning a bar code requires only one hand. Such freedom of movement helps during inventory counts of small parts, when one hand can lift parts and the other can scan.

The traveling PC

Wearable computing equipment takes the ergonomic concept one step further. In mid-1991, Park Engineering Associates, Inc. in Spokane, Wash., introduced the CompCap, a 1-pound IBM PC-compatible machine. The user wears a soft headband, which holds a small eyepiece in front of one eye and a microphone for voice input. The wearer sees a CRT display when looking into the eyepiece, with a belt-mounted PC making the whole setup portable.

A shipping clerk reads the purchase order number into the microphone. The speech processor in the unit processes the information, and a pick list appears on the eyepiece display. The unit carries a list price of \$3,995 in single-unit quantities.

Symbol Technologies, Inc. in Bohemia, N.Y., also recently introduced a wearable bar-code scanning system (see photo above). Code-named "Gladitor," the unit consists of a bar-code scanner, a small display/keyboard and a belt-mounted, 16-bit DOS-based computer and utilizes radio communications.

The 5-ounce bar-code scanner straps on the back of either hand; the user literally points at a bar-code symbol to scan it. Not only does the setup provide freedom of movement for the operator, but Symbol claims it may also cut down on repetitive motion injuries, which can occur with a more typical finger-pulling scanning motion.

The 8-ounce keyboard/display straps on the forearm just above the scanner, and cabling from the two units connect them to the 2-pound belt pack.

Products should begin shipping by the end of the summer, with the complete package of scanner, display/keyboard, belt and computer starting at \$3,690. McKesson Drug Co.'s Spokane, Wash., distribution center operators are testing the product (CW, May 11).

Loosing the human touch

Developments in automatic conveyor belt scanners allow a warehouse to operate virtually without human intervention. An automatic scanner must read bar codes regardless of the orientation between label and scanner, because by the time a bar

code reaches a scanner, it is often impossible to predict the direction it will be facing.

Most fixed-station scanners perform omnidirectional scanning by using mirrors to reflect a single laser beam through a very fast, complicated circulator pattern. The object of this operation is to pass a beam through any possible bar code. While the technique is successful at reading bar codes on packages, in order to increase performance, it needs faster beams, better mirrors and quicker processors to analyze the reflected light.

Over the last couple of years, improvements in laser scanners have concentrated on software techniques instead of faster optics.

The cost of computing power has dropped faster than the cost of optics, and the new software approaches make the most of available computing power.

Several overhead scanning companies are able to assemble bar-code reads from a collection of partial scans. Let's say a bar code contains a total of 100 bars and 100 spaces (for convenience's sake, let's refer to these as elements 1 through 200). As the bar code moves past the scanner, one pass of a laser beam may

A receiving operation

- Incoming driver gives receiving manager bill of lading and purchase order number.
- Receiving manager gives to CRT terminal, calls up file with data on ordered materials and downloads to handheld unit.
- Receiving clerk enters each received product and quantity into handheld terminal. Program in terminal checks results. If product has bar-code label, it is used for identification. Otherwise, clerk must identify product and print bar-code label.
- Clerk records location of each product he puts away by scanning bar code on storage rack.
- After clerk puts away order, he returns terminal to receiving manager. Terminal contains list of every product received, quantity and product location in warehouse.
- Information is uploaded into main warehouse computer through same CRT terminal used to load purchase order file. Products now available for distribution.

... and in the future

- Warehouse clerk wearing driver wears, not carries, portable terminal. Wasted movements storing and retrieving terminal are eliminated.
- High-density bar codes convey not only an index into the warehouse's database but also a complete list of products being delivered. No need to wait to CRT to download list.
- Automatic bar-code scanners, feeding information to a conveyor system, sort incoming products, shuffling them either to right storage location or directly to an automatic truck or waiting assembly line.

Source: Kevin R. Sharp

CW Chart: David Greenstein

16K, is currently available and packs over 100 ASCII characters per sq. in. (see page 83).

The health care industry, for one, is now adopting 2-D bar codes for labeling unit dose medicine packages.

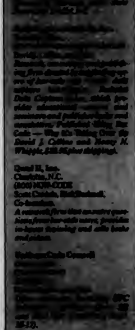
Two-dimensional bar codes contain data, not just indexes. So instead of merely containing an index of purchase orders, 2-D bar codes actually contain the records associated with the purchase order. This eliminates the need to look up additional information in the database.

This architecture has particular advantages.

With 2-D codes, these companies print the profile on the return card and delete or summarize the records from their central files after the mailing. They will get the information they want, without having to support large databases. By the end of 1992 or early 1993, 2-D capabilities should become standard among bar-code printer and scanner vendors.

Data collection strides

In the description of the warehouse operator at the beginning, the operator's hands were free yet the operator was able



THANK YOU

Every week for 25 years, we've brought you the latest news on developments in information systems.



We've succeeded in this mission because we have the support of readers like you: highly skilled professionals dedicated to bringing the world of information technology to your organization.

On June 22, Computerworld celebrates 25 years of Leading IS by bringing you a very special commemorative issue.

In one-on-one interviews with Computerworld editors, 25 industry legends speak out on their visions of the future of computing:

Gene Amdahl
Gordon Bell
Dan Bricklin

Ted Codd

Seymour Gray
J. Presper Eckert

Douglas Engelbart

Bill Gates
Judge Harold Greene
Andrew Grove
Max Hopper

Kathy Harison
Steve Jobs
Philippe Kahn
Mitch Kapor
Alan Kay

Inventor of the IBM 360
Designer of the VAX
Spreedsheet
Relational Database
Management Guru
Supercomputing Pioneer
Inventor of the Emul, First
Commercial Computer
Personal Computing Pioneer
from Xerox PARC Group
Founder of Microsoft
Broke Up AT&T
Co-founder of Intel
Head of American Airlines'
SABRE Reservation System
Kodak IS Outsourcing Pioneer
Co-founder of Apple Computer
Founder of Borland
Founder of Lotus
Xerox PARC Pioneer, Credited
with Inventing the PC

James Martin

Bill McGowan
Scott McNealy

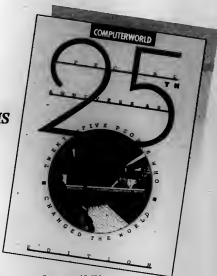
Robert Metcalfe
Ken Olsen
Ross Perot

Ben Rosen

Charles Wang

Tom Watson Jr.

Data Processing Guru
of the '70s
Chairman of MCI
Founder of Sun
Microsystem
Ethernet Inventor
Founder of DEC
EDS Founder, Hostage
Rescuer and Possible
Presidential Candidate
Venture Capitalist who
Bankrolled Lotus
and Compaq
Chairman of
Computer Associates
Former Chairman of IBM



Computerworld's 25th
Anniversary Issue Supplement, June 22, 1992

COMPUTERWORLD
The Magazine of IS
Management

All
closings
for the 25th
Anniversary Issue
are: June 26, color
and June 28, black & white

MANAGER'S JOURNAL



High-tech exec? On the contrary!

Chicago bank CEO counsels management to make cautious technical investments for the best yields

BY ELLIS BOOKER
CHICAGO

Alex J. Pollock does not have a computer in his office; he says he can't imagine how owning one would help him as chief executive officer and president of the Federal Home Loan Bank of Chicago. A moment later, however, Pollock is speaking knowledgeably and eloquently about information technology as it relates not only to the running of his own \$11 billion financial institution but to the larger world of finance, where "we deal in markets which themselves couldn't exist without the substrata of computing technology."

Such paradoxes delight this intellectual contrarian, who has published extensively on financial and management issues, including how management can leverage information technology.

Pollock's writings and the charts and formulas he has created to drive home his arguments derive from his earlier life.

He embarked on his banking career in 1969, has taught college-level philosophy courses and, in the mid-1980s, spent a year as a principal at Nolan, Norton & Co., a management consulting firm specializing in computer technology.

Pollock joined the Federal Home Loan Bank of Chicago last October.

■ On why he doesn't use a computer:

"I'm a great believer in their incredible power and contribution... but not in my job. The job of general management has extremely little to do with analysis of numbers."

"Overwhelmingly, the important work of the world is verbal. My father, a wonderful consultant, had a saying: 'If it's in the book, it's too late.'"

■ On the significance of computing technology for a bank:

"Computer systems apply to every single part of the organization in some way. What's a financial organization? It has next to no physical reality—that's why it's philosophically interesting. [A bank] is about ideas of financial value, of credits and risks."

"Everybody thinks banks are about money. What banks are really about is knowledge and information. That is, people and systems working together."

"Underneath it, of

course, you have the bookkeeping system. Think about a financial transaction and how many computers systems it triggers. [Computers] help us understand all this philosophically fascinating abstraction."

"I picture a financial organization as [being] like the double-helix DNA molecule. In one strain is knowledge and information in human minds; data and information in computing machines is in the other."

■ On why he doesn't believe in the title "chief information officer":

"First of all, the name is so stupid. Think about all the forms in which information comes. Nobody can be the chief information officer because there's too much information."

"Nolan, Norton had a better name for the job: computing functional executive."

"The idea that you should have an executive who is extremely well-versed in the function of computing and its application in the firm is a great idea. Now, where does that executive have to be? That's more open."

■ On IS as it is used at Federal Home Loan:

"If you look at the Home Loan banks over the sweep of time, the financial sophistication is orders of magnitude greater and really couldn't exist without information systems."

"This is an approximately \$11 billion bank. We're also extremely high-



Two CEOs: Alex J. Pollock, left, bachelor's degree cum laude from Williams College, 1965; master's degree (philosophy), University of Chicago, 1969; M.P.A. (international relations), Princeton University, 1969.

Two careers: President and CEO of Federal Home Loan Bank of Chicago, 1991-present; President and CEO of Community Federal Savings, 1989-90; Managing director, Nolan, Norton & Co., 1988. Other senior management positions with Marine Bank NA and Continental Illinois National Bank.

Accomplishments: Spearheaded Community Federal Savings' turnaround from insolvency and deconsolidation to a bank marked by activist, disciplined management, revitalized marketing and sales, boosted morale, stabilized deposits and balanced interest rate risk.

quality—rated triple A by both Moody's and Standard & Poor's. There are 12,000 banks and 2,000 savings and loans in the U.S. How many [banks] do you think have this rating? Fourteen. Of those, 12 are the Federal Home Loan banks."

"We also have an exceptional [ratio] of assets to people. We have 110 employees. That's \$100 million in assets per employee. A typical commercial bank with those kinds of assets would have 3,000 or 4,000 employees."

"This is our most special characteristic: You have to have extremely tight control... There is a lot of money moving around. Systems are one thing that helps us [keep control]."

"Moreover, we deal in markets which themselves could not exist without the substrata of comput-

ing technology."

"We are floating on a sea of automated processing."

"Take the mortgage bank securities market, which was created 15 years ago and is now over \$1 trillion. It could not exist, period, without these systems."

■ On the vulnerability of the worldwide financial system, now so dependent on an electronic web of networks and computer applications:

"The financial system is probably the most highly automated sector of the world. What's the state of this system? Well, it's got terrible problems. There's data, there's information, there's knowledge, and then there's wisdom. No question but that technology allows great crunching of data. However, there's a huge problem—one that every data processing man-

Continued on page 86

INSIDE

► The Vendor Association and Outsourcing Interest Group holds its first meeting. Page 87.

► Calendar. Page 88.

High-tech exec? On the contrary!

CONTINUED FROM PAGE 85

ager knows about — in getting from data to information.

"How do we get to knowledge, let alone wisdom? I'm not sure I have the answer, but I'm sure it's the right question."

"In the '80s we managed to have a gigantic bust, just as big as any bust they ever had before any computer existed. So, it's probably the case [that] we haven't achieved better knowledge of risks and returns."

■ On using information systems to differentiate in the marketplace:
"What a CEO has to do, in conjunction with the management team, is decide what you want computer technology to do for you."

"The discussion I want to have is NOT what box to buy. The discussion I want to have is what's it going to do for us, so we get a return on what we spend on it."

"How are we going to control this potentially interesting, very expensive stuff, which has a high potential both for doing something good and for wasting a ton of money?"

■ On the value of a "defensive" IS strategy:

"Where competitiveness is the issue, top management has to decide whether to use technology offensively or defensively. In finance, the overwhelming right answer, I think, is a

defensive strategy.

"Defense is tremendously important. That doesn't mean you don't have to be current — but that's probably the necessary rather than the sufficient condition."

"I'm a great admirer of Gen.

Sherman — clearly the most innovative strategic thinker of the Civil War. Sherman, you know, was a banker."

"His strategy was described as a 'strategic offensive combined with a tactical defense.'"

You want to make the other guy attack you because that's a much stronger position."

But strategically, you want to be moving in such a way that you'll gain ground."

■ On the illusion of buying strategic advantage:

"First, you're all buying the same computers, and the trend is to buy software. So if you're going to develop software, you have to ask yourself: 'Do I truly believe that out of the 14,000 U.S. financial institutions, not even counting Wall Street, I somehow have analysts and programmers who can do this better?'"

"I think it would take a bold bank manager to claim that. Also you have to remember, any software company that sells you a

system will be happy to walk across the street and sell it to your competitor."

"I haven't heard yet where you're going to do something that few or none of your competitors can replicate."

■ On technologies to watch:
"I think there are tremendous productivity possibilities with [document] imaging. But again,

HOW DO WE get to knowledge, let alone wisdom? I'm not sure I have the answer, but I'm sure it's the right question."

ALEX J. POLLOCK
FEDERAL HOME LOAN BANK

Pollock's abacus

Alex J. Pollock, Federal Home Loan Bank of Chicago's CEO, sees IS and business management priorities as poles on an abacus — and the smart CEO, he says, will keep the hands moving according to the needs of the firm and its customers

Management control	Decentralized	Centralized
Location of processing	Distributed	Centralized
Data integration	Easily accessible	Access difficult
Technical currency	Leading-edge	Old
Operational coverage	Broad, mainstream	Pick spots
Management/marketing coverage	Broad, mainstream	Pick spots
Strategic posture	Offensive	Defensive
Organizational posture	Driver of change	Accommodative

Source: Alex J. Pollock

EW Chart: Tom Ichniowski

in my view this is still fundamentally defensive and has to do with not falling behind."

"Knowledge-based systems have a lot of potential. ... I'm still a believer."

"Like anything else there's the expectations vs. the reality, but a number of these systems are now functioning in finance. They have always been thought of as a natural for credit and trading systems."

TIMELY Q

When your customers need to buy

EDS helped Kmart answer yes.

In a difficult year for retailers, Kmart achieved record profits.

They did it thanks, in part, to one of the world's most comprehensive, highly integrated point-of-sale bar coding and scanning systems. Developed in partnership with EDS, it helps

Kmart identify and respond to shifts in customer buying patterns with unprecedented speed and accuracy.

Every day, satellite hookups feed sales information on more than 200,000 items from more than 2,300 stores to merchandise managers in Troy, Michigan. This enables them to

EXECUTIVE
TRACK

F. Robert Kurimsky, an 18-year veteran of Philip Morris Inc., has signed on as a consultant to Chicago-based systems integration firm Technology Solutions Co. (TSC). Head of information systems at Philip Morris from 1974 to 1985, Kurimsky went on to serve the huge tobacco, brewing and food conglomerate as vice president of corporate IS until his retirement last month. He will provide TSC with insight into management and technology issues facing consumer products firms.

.....
RJ.R. Nabisco, Inc.'s Nabisco Foods Group has named **Donald N. Berkshale** as director of sales IS. Berkshale joined the company as a financial systems project manager in 1985.

Outsourcing buyer, be aware

Outsourcing users advised to learn from vendors' negotiating skills

BY NELL MARGOLIS
CHICAGO

ATLANTA — Outsourcing users in search of a shortcut to contracting smartly do not have to look any further than across the bargaining table, according to Harry Glasspiegel.

"Enlist your vendors — at least, the good ones," Glasspiegel told information systems executives from some 20 user companies who gathered earlier this month for the first official meeting of the recently formed Vendor Partnership and Outsourcing Interests Group.

A partner in the Washington law firm of Shaw, Pittman, Fotts & Trowbridge — which has represented users in some of the high-profile outsourcing megadeals of the past several years — Glasspiegel warned users against overlooking outsourcing vendors as an invaluable resource.

tory of the negotiating savvy users need to develop — and fast.

"Large user institutions that may be incredibly sophisticated in all kinds of ways are still, more often than not, first-timers when it comes to the process of evaluating and negotiating an outsourcing deal," he added. "Vendors have been there many times before."

That disparity, Glasspiegel said, was the thrust of talk at the meeting of the fledgling group, launched earlier this year by Los Angeles-based Key Consulting Group, Inc. and neighboring consulting firm DuWayne Peterson Associates.

Support group

The group was formed to offer a forum for peer-to-peer inquiry and education among IS and business executives at companies that are eyeing outsourcing and firms that have already opted for it.

However, Glasspiegel added, user firms have more to learn than to fear from experienced vendors. For starters, he said there are two key lessons users stand to gain from enlisting the vendor's approach to outsourcing: Form a team and take the time.

According to Glasspiegel, IS executives are ill-advised to negotiate alone. Delegates from a firm's financial and legal departments, as well as from IS and senior corporate, should work together, bringing their various perspectives to bear on the outsourcing scene.

But they should not expect to wrap it up quickly. Users "have a tendency to underestimate the complexity and time it will take to have a full and complete discussion," Glasspiegel said.

IN BRIEF

IS services tax attacked

■ Sen. Melissa A. Hart (R-Allegany) last week introduced legislation in the Pennsylvania Senate that would repeal the state's sales tax, enacted last year, on computer programming, data processing, systems integration and other computer services.

Hart pointed out that Pennsylvania is the only state to have such a tax. "Its continuation will clearly impair our competitive position," she said.

■ American Express Co., in a landmark agreement with the state of New York's attorney

general, earlier this month agreed to notify more than 20 million cardholders that it compiles computerized profiles of individual spending habits — not just a mailing list — for merchants' use in targeted marketing campaigns.

Cardholders must be given the option of having their records excluded from the marketing database rented to merchants.

In addition, Robert Abrams, the state attorney general, proposed a state law that would apply the same rules to all credit card issuers.

QUESTION: again, will they buy from you?

swiftly and accurately identify what's hot and what's not. Within a season. Within a region. Even store by store. This helps ensure sufficient inventories of fast-moving items, where needed, when needed.

But the benefits don't stop there. The system **helps speed customers** through

checkout lines 25% faster than before and also helps prevent pricing errors.

The results have been impressive. Customer satisfaction and repeat **sales are up**. Way up. So are profits.

Changes in technology create opportunities to improve service and increase profits. To learn how, contact EDS, the

world leader in applying information technology. Write Barry Sullivan, Director of Marketing, EDS; 7171 Forest Lane, M2, Dallas, TX 75230. Or call (214) 490-2000, extension 102.

TAKE ADVANTAGE OF CHANGE™

EDS

CALENDAR

JUNE 7-13

Control '92, Cincinnati, June 7-13 — Contact: Canon, Cincinnati, Ohio (513) 663-2300.

Security Year Networks, San Antonio, June 9-10 — Contact: Patsy Chapstick, CSE Conference Registration, San Francisco, Calif. (415) 955-2525.

A/C Systems '92, Dallas, June 9-11 — Contact: Gay Baker, Betsyville, Ky. (502) 368-2878.

Peace '92, Denver, June 8-12 — Contact: Marina Gots, J.D. Edwards & Co., Denver, Colo. (303) 485-4863.

Creating and Maintaining Customer-Owned Companies, New York, June 9-10 — Contact: The Conference Board, Inc., New York, N.Y. (212) 339-0290.

Automated Edge '92, Dallas, June 9-11 — Contact: Autodesk, Inc., San Rafael, Calif. (415) 333-2394.

LetterWorld, Boston, June 9-11 — Contact: Jon Collins, Boston & Partners, Inc., Waltham, Mass. (617) 894-0953.

Self Maintenance Users Conference, Minneapolis, June 9-11 — Contact: Datasoft, Eden Prairie, Minn. (612) 825-4235.

Networking for the '90s, Toronto, June 10 — Contact: Rogers Data Services, Markham, Ontario, (416) 513-5887.

VotingLogic '92, Bedford, Mass., June 10-13 — Contact: Imaging Technology, Inc., Bedford, Mass. (617) 275-2700.

W/80 Summers, Washington, D.C., June 10-12 — Contact: Advanced Technology International, Dept. 82089, Washington, D.C. (202) 323-8843.

Developing Successful Outsourcing Agreements, Chicago, June 11-12 — Contact: Data Tech Institute, Chgo., N.J. (201) 478-5400.

JUNE 14-20

The Partnership Conference, Chicago, June 14-17 — Contact: Donna Dilbeck, Life Office Management Association, Meetings Department, Atlanta, Ga. (404) 951-1770.

Current Issues in Managing Information Technology, Cambridge, Mass., June 15-18 — Contact: Center for Information Systems Research, Cambridge, Mass. (617) 253-8967.

Supersum '92, Chicago, June 15-18 — Contact: Ben Stadler, E. J. Krane & Associates, Inc., Bethesda, Md. (301) 586-7800.

Regolith International Conference, Santa Clara, Calif., June 16-19 — Contact: Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 228-9157.

Method '92, Ann Arbor, Mich., June 17-19 — Contact: Customer Management by Experts, Inc., Green Pointe Park, Mich. (313) 863-1824.

The Second Annual Manufacturing Leadership Summit, Cambridge, Mass., June 18-19 — Contact: Jay Management Roundtable, Boston, Mass. (617) 225-8200.

Twisted Week '92, Los Angeles, June 18-20 — Contact: Dave Oppenheimer, Los Angeles Tatum West Coast, Los Angeles, Calif. (310) 387-5544.

JUNE 28-JULY 4

Business World, Boston, June 29-July 1 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3860.

Leading the Transformation of Information Systems, San Francisco, June 29-July 1 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 294-8566.

JULY 5-11

Information Worldwide Users Conference, San Jose, Calif., July 6-10 — Contact: Jay Prosser, Informatics Public Relations Group, Menlo Park, Calif. (415) 926-6316.

18th Annual Management Annual Conference, San Francisco, July 8-10 — Contact: Terence Graham, Financial Management in Data Processing, San Francisco, Calif. (415) 731-3706.

JULY 19-25

Comfest, San Francisco, July 20-23 — Contact: Matt Mandel, World Expo Corp. (800) 225-4686.

Object World '92, San Francisco, July 20-23 — Contact: Lyle Publications, World Expo Corp. (800) 225-4686.

QuickPress Users Conference, New York, July 22-23 — Contact: QUI, Sales, N.J. (609) 896-3822.

JULY 26-AUG. 1

The Managing Enterprise Networks Conference, Boston, July 27-29 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3860.

PC/Canada, Toronto, July 28-30 — Contact: The Inter-Net Group, Hamilton, Mass. (617) 649-9935.

AUG. 5-8

Red Herring '92, Washington, D.C., Aug. 5-8 — Contact: Sylvia Griffin, National Trade Publications, Inc., Alexandria, Va. (703) 463-6500.

Pass CE-RM and Multiple Conferences & Receptions, Washington, D.C., Aug. 5-8 — Contact: Sylvia Griffin, National Trade Publications, Inc., Alexandria, Va. (703) 463-6500.

AUG. 23-29

Auto-Tech, Detroit, Aug. 25-27 — Contact: Automotive Action Group, Southfield, Mich. (313) 368-3578.

SEPT. 20-26

Image World, New York, Sept. 22-25 — Contact: Beta Systems, Knowledge Industry Publications, Inc. (914) 328-9127.

Virtual Reality '92, Westport, Conn. Sept. 23-25 — Contact: Mercury Conference Management, Westport, Conn. (203) 224-8987.

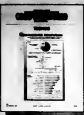
COMPUTERWORLD

EDITORIAL REPRINTS

Reprints from *Computerworld* provide a valuable marketing/sales tool for your company!

Editorial articles are available as reprints and can be ordered in various quantities, and customized to include your company logo and sales offices. Reprints* of *Computerworld* editorial, written specifically about your company or a subject of general interest can be a great communications tool for use in:

- Promotional/P.R. materials
- Internal meetings
- Internal newsletters
- Company seminars



- Produced in minimum quantities of 500 for black-and-white and two-color reprints; 1,000 for four-color reprints.

For complete information on ordering reprints contact:

Reprints Department
Computerworld
378 Constitution Road
Framingham, MA 01701-9171
Tel. (608) 879-0700
Fax. (608) 872-8854

RECRUITING TALENT FOR DENVER?

Advertise in the June 15th Western Edition when *Computerworld* 2 regional Careers feature examines "15 Careers in Denver."

Ad Close: June 11.
800 343-6474 ext. 201

Where do you stand?



Computerworld's 25th Anniversary Leadership Challenge

Moderators:

Marvin Kelt
Director, Joan Shorenstein Barine
Center for the Press, Politics and
Public Policy at Harvard's John F.
Kennedy School
Bill Laboris
Editor in Chief,
Computerworld

Hosts:

Gary Roach
Publisher,
Computerworld
Patrick J. McGovern
Chairman,
International Data Group
Charles Wang
Chief Executive Officer,
Computer Associates

Debaters:

Gordon Bell
Author of "Computer Structures"
and "High-Tech Ventures"
Senator Jeff Bingaman
Chairman of Senate Defense Industry
and Technology Subcommittee
Lewis Branscomb
Robert Penn Public Service Professor
at Harvard's John F. Kennedy School
Stephen Roach
Principal and Senior Economist,
Morgan Stanley
Roger J. Sippel
Chairman of the Board of Directors,
Informa Software, Inc.
Gilbert P. Williamson
Chairman and Chief Executive Officer,
NCR Corporation

Monday, June 22, 1992

**Alice Tully Hall
Lincoln Center
New York City**

**Cocktail Reception: 7 pm
The Great Debate: 8 pm**

**RSVP to: Mary Doyle
Telephone: (508) 875-0700 ext.164
Facsimile: (508) 875-0446**



**COMPUTER
ASSOCIATES**
Software superior by design.

COMPUTERWORLD
The Newspaper of IS
Established



"...Typically 40+ percent of our total placements are a direct result of our Computerworld recruitment advertising."

*- Bob Shields
Owner & President
Robert Shields & Associates*

For over 10 years, Robert Shields & Associates has been specializing in the placement of computer software professionals both in the United States and overseas. The agency's day-to-day business centers around finding experienced candidates to meet the specific software needs of their clients. According to Owner and President Bob Shields, their regular advertising schedule in Computerworld plays an important role in their recruitment success.

"We serve a very broad market - from start-up companies to the Fortune 50 in virtually all industries. Because our client software requirements are extremely diverse, it's essential that we have access to a large pool of junior and senior-level software professionals with a great diversity in expertise. Computerworld is by far our single best source for reaching qualified computer professionals nationally.

"And to us, national reach is key. Although Robert Shields & Associates is based in Houston, Texas, our membership in National Personnel Associates puts us in direct contact with over 300 affiliate offices all across the country. Experience has shown us that only Computerworld delivers the computer market nationally. No other publication even comes close.

"Since we do work such a broad market, we sometimes advertise in specialty publications as well. With Computerworld, however, we consistently get more responses - and higher quality responses - than with any industry or discipline-specific publication. Because these candidates are much more likely to have the right kinds of experience, typically 40+ percent of our total placements are a direct result of our Computerworld recruitment advertising.

"Having been in the DP business since 1963 - and an avid reader of Computerworld from the very beginning, I've come to one conclusion: If you had to choose one publication that computer professionals read on a regular basis, it would have to be Computerworld. That makes Computerworld a very powerful recruitment advertising vehicle.

"During the 27 years I've been in the computer business, the demand for software professionals has consistently outstripped the supply. Every industry indicator suggests that this trend isn't about to change. As our client needs - and our needs - continue to grow, I see Computerworld continuing its role as our best source for reaching computer people on a national basis."

Computerworld. We're helping serious employers and qualified information systems, communications, and PC professionals get together in the computer community. Every week. Just ask Bob Shields. For all the facts on how Computerworld can put you in touch with qualified personnel, call John Corrigan, Vice-President, Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

COMPUTERWORLD

Where the qualified candidates look. Every week.

COMPUTERWORLD

COMPUTER CAREERS

The hotel welcome mat is out

The hotel welcome mat is out. The computer industry is no longer a place where you can just show up and get a job. It's a place where you need to have the right kind of experience, typically 40+ percent of our total placements are a direct result of our Computerworld recruitment advertising.

With the right kind of experience, typically 40+ percent of our total placements are a direct result of our Computerworld recruitment advertising.



1 800 343-6474
IN MA 508 879-0700



COMPUTER CAREERS



**HIGH PERFORMANCE TRANSACTION
PROCESSING PROFESSIONALS:
NEW OPPORTUNITIES WORLDWIDE**

Hyperion is an international company specializing in solutions for the travel and computer-based transportation industries. We are rapidly expanding into new service areas and are now accepting applications from professionals with at least five years experience.

in any of the following:
TPF/ALCS, UNISYS, USAS 2000, STRATUS,
TANDEM, C, C++, and CASE tools.
Contact the Hyperion office nearest you.

HYPERION

DALLAS
4004 Bellline Road, Suite 150 • Dallas, Texas 75244
Voice: 800-992-4873 Fax: 214 980-7712

SINGAPORE
1 Cantonment Road • #13-06 Southpoint, Singapore 1
Voice: 65-224-9327 Fax: 65-224-9820

AMSTERDAM
Partenier 21 • 1106 ZA Amsterdam, The Netherlands
Voice: 31-20-6476161 Fax: 31-20-6474256

SOFTWARE DEVELOPERS
To \$80,000

CICS PRODUCT

MANAGERS
T 580 000
A B C D E

DEVELOPERS IN JAPAN

ROBERT SHIELDS
ASSOCIATES

**PROGRAMMERS
ANALYSTS**

System professionals with a minimum 5 year IBM mainframe experience using any of the following: MVS, RJE, DB/DC, JCL, TSO/ISPF, "C", REXX, ADABAS, Natural, Link, Sun workstations, X-WINDOWS, and preferably with some knowledge of BTS, TELON, PAMAL, PL/I and FORTRAN. We also have positions for EDP and microcomputer consultants with LAN experience. Excellent free salaries, vacations, housing, medical and travel allowances. These are immediate openings so fax or mail your resume today!



2401 Fourteenth, #911
Houston, Texas 77057
Tel. (713) 977-1167
Fax. (713) 977-1166

Computer-aided design/prod-
uction (CAD/CAP) area manufacturers
and utilities include: computer-
based design/production-aided
design (CAD) systems, develop new
product designs and cost estimates
and realize end product designs
with CAD systems. No exp.
required. Must have master's
degree in engineering and
have taken at least two college-
level courses involving computer-
aided design and at least four
courses involving computer-
based design/production-aided
design. \$45,000-97,500 a year.
Exp. 36-60 mos. Must have per-
manent authority to work perma-
nently in U.S. Travel necessary to
elsewhere (no salary) to L. Ohio.
EO 13206968. Ohio Bureau
Employment Services, P.O.
1818, Columbus, Ohio 43261.

The University of Houston offers a variety of exciting opportunities for students seeking to combine their academic interests with practical experience. The university's commitment to excellence in education and research is reflected in its diverse programs and facilities. For more information, please contact the Office of Career Development at (713) 772-1000.

Engineer, Senior Staff, Press & design & manufacturing of workstation, including software design, system testing, & integration. Duties incl. testing of software in an integrated environment. General Processing Unit (GPI) Graphics Accelerator (GA) of workstation. Also resp. for porting of UNIX to the workstation. Writing of shell scripts for UNIX, and in an integrated environment. Environment on the workstation: Page, Ph.D. in Computer Science & 4 yrs. exp. in job offered or computer architecture design. Also 4 yrs. exp. in computer architecture, hardware logic design with ASIC, Bus controller system programming, VLSI peripherals & integration, VLSI, hardware design & testing, and system integration. Salary \$60,000. Send life of us resume to: Lawrence Katz, 46784 Fremont Blvd., Fremont, CA 94539.

[illegible][illegible][illegible]

Currently unemployed?

**AVAILABLE
MAY 25th!**

Upload your resume to Computerworld's FREE bulletin board system where employers can download it! Just dial 1-508-879-4700 with your computer and modem and follow the instructions for uploading your resume. The fields you'll be asked to fill will appear as follows:

COMPUTERWORLD

First Name	
Last Name	
Middle Initial	

Address(1) _____
Address(2) _____
City _____
State _____
Zip _____

Phone

Computer Systems	
Operating Systems	
Development Environments	
Languages	
Databases	
Communications	
CASE	
Business Applications	
Other	

Comments _____

Position Sought _____

Relocation Information _____

COMPUTERWORLD**CAREERS
ON-LINE**

508-879-1700

Cross-training on the job builds skills

Fast Track is a twice-monthly column dedicated to answering questions on career directions. This week's guest adviser is Jim Parker, a senior recruiter at Technical Connections, Inc., a Los Angeles-based executive search firm specializing in the placement of computer professionals.

Q It seems that if you don't have experience in a skill set that happens to be popular at the moment — the acronym du jour, if you will — companies completely discount your general, fundamental, conceptual design experience. How can you convince people that you can learn a new skill set?

A With position vacancies at near record lows and a surplus of highly qualified people available, employers can hire people with the exact skill set that they need. Do careful research on what skills are in growing demand in your area and take advantage of any training opportunities to gain these skills.

If the skills you need cannot be gained at your current employer, consider moving to a position that will use your current strengths while providing such cross-training.

Q More than two years ago, I stumbled into a position administering a local-area network. I am now a network analyst responsible for a 100-node LAN that has grown into a small wide-area network.

I also do some report programming in RPG/400 on our midrange system. All my knowledge has come from on-the-job training and seminars.

I consider myself very knowledgeable in my field.

But without a technical education — my degree was in history — are my skills attractive in the marketplace?

A Certainly. Except for management and management consulting positions, computer science/MIS degrees are rarely a prerequisite, although they are generally viewed as a plus. With the job market likely to remain competitive for some time, I suggest you seek formal education in computers and business systems.

FAST TRACK

CAREER ADVICE
FOR THE '80s

Q There are a number of information systems jobs in manufacturing in my part of the country, but it seems that manufacturers always require experience in a manufacturing environment. Is there any way to present nonmanufacturing experience in a way that would be palatable to manufacturing companies?

A Your best approach depends on whether specific manufacturing experience is truly a hard requirement of the position. Most jobs involve three areas of expertise: applications, technical and interpersonal.

You should try emphasizing your relevant technical and interpersonal skills and draw parallels between your applications experience and the manufacturing industry.

Q I have worked in the IS department of a large bank for 12 years. The banking industry is declining, and I want to make sure that my next move is to a more stable industry. What do you suggest?

A Stable industries are those that are more recession-proof, such as the health care industry and the food industry. Regardless of the economy, people will still get sick, and people still have to eat. But job security in the 1990s will be more a function of maintaining skills that are in demand, rather than concentrating on a specific firm or industry.

Q I have been a mainframe programmer/analyst for eight years. Given current industry trends, I think I would be better positioned in a more PC-oriented position. How can I make the transition?

A Look inside your current firm for opportunities to gain personal computer experience in an area such as mainframe-to-PC connectivity. Seek additional training, either on the job or at school. Nurture relationships with people who can be influential in assisting your job shift.

If such opportunities do not exist at your current company, look for a mainframe position in another company with a commitment to PC development and open career paths.

—We want to hear from you. Call your career questions in using the Fast Track line at (508) 820-8522 or send them by fax to Kelly Dwyer at (508) 875-8931. Questions may be edited for brevity and clarity. If we use your question, we'll send you a gift.

JOB SNAPSHOT AS/400 professionals

Job Snapshot is a monthly column that provides detailed information on selected job categories.

►**JOB REQUIREMENTS:** Familiarity with the RPG/400 language is a plus. Experience in C programming and object-orientation is prized because IBM is working on improvements to the operating system to make it more object-oriented, one recruiter says. Database design skills and knowledge of personal computers and PC connectivity are also becoming increasingly desirable because the AS/400 is being used in more end-user situations.

► **BEST EDUCATION:** Skills and experience are more important than formal education, although most AS/400 professionals have graduated from trade school or a two-year community college. AS/400 courses are offered by IBM and some third-party vendors, and attendees are often sponsored by firms. Because these courses are expensive for individuals, one recruiter suggests making an arrangement with someone you know who works on an AS/400 and learn to use it after hours.

► **CAREER PLUSES:** Opportunities for AS/400 programmers are expanding as more firms jump on the downsizing bandwagon. Furthermore, because these jobs generally involve considerable direct interaction with the user community, AS/400 programmers wind up learning a lot about the business.

►**CAREER MINUSES:** AS/400 shops are fairly small, on average, so you often have to be willing to be a jack-of-all-trades.

► **AVERAGE SALARY:** For the AS/400 programmer/analyst with less than a year's experience, the national average salary about \$26,000, according to the 1992 38-400 National Salary Survey, which is conducted every six months by Nate Vail & Associates, a recruiting firm in Des Moines, Iowa. For those with a two-year degree, the range is \$20,000 to \$28,000; a four-year degree usually guarantees between \$26,000 and \$32,000. The national salary average for three years of experience is \$34,000. At seven or eight years, the pay moves to more than \$40,000. The free survey is available by calling the firm at (515) 274-1729.

>BEST OPPORTUNITIES: There has been a growing need for AS/400 professionals in the manufacturing sector, and because manufacturing is popular in the Midwest, recruiters agree that Chicago is the hotbed for AS/400 opportunities.

Researched and written by Kelly E. Dwyer, assistant editor, features, and Kathleen Gon, a free-lance writer based in Medford, Mass.

Operations Research Consultant: Utilizing the quantitative methods involved in Operations Research, provides consulting services to management in areas such as: relating to Information & upgrading of inventory control systems, computational management information systems, support systems for providing maintenance programs for management of various enterprises & operations, particularly in support of maintenance and operations. Utilizes MRP languages, SAS & Symphony software systems & other D Base for operations. Gather necessary documentation & data. Prepare assessment reports of current operations. Prepare forecasts relating to costs & prepare final reports. Consult with management regarding the utilization of appropriate staff.

[illegible]

**CALIFORNIA
CONSULTANT 2
PERMANENT
OPPORTUNITIES**

CONSULTANTS
IN TECH INFO/HAZ/WRM
SOLID SYSTEMS PROG
MLP CONSULTANTS
ICSP #4'S
OSHA or IOSH
JEDS PA
ALL ELIGIBLE CONSULTANT
ULTIMATE CONSULTANT
ABOVE INFO DE CONCL
ORSHAW-HIL/WOLANSKI
International Procurement
Systems, Inc.
1050 Wilshire Blvd. #1212
Los Angeles, CA 90016-1052
Call: 213/760-3861 or
Fax: 213/768-3855

BRACK CONSULTING GROUP, INC.
Our dynamic, rapidly expanding Consulting Group, imperative task of choice, currently seeks individuals for current positions in:

JARVIS CORP.	VALUATION/Analysis
C-Of/Operations/ROLE	Cost/Estimating
CH2M HILL	PROJECT/ANAL
INDUCE/Infrastructure	DESIGN/PR
C/WINDERS App. Dev.	Mac/Consulting/Design

Call or send resume to:
ECG, Inc.
1545 Peachtree Road, NE
Suite 1728, East Tower
Atlanta, GA 30309
(404)593-1184 FAX#(404)593-2094
ATTN: Anne Pappalardo

EXPERIENCED TEAMED WITH PROGRESS

Information Technologist
Aluminum Company of America

ALCOA is embarking on new directions for the use of information and the Information Technology that we employ. We are looking for a few people who like to be challenged in an evolving environment, to be involved in setting new directions and leading technology transfer. Knowledge and experience in the areas of Open systems, network-based computing, Client/Server, UNIX, Information Sharing or Reengineering of business processes is required. An advanced degree in the field of Information Technology is desired.

To be considered, please send your resume to:

of college and M.S. degrees in Operations Research, must have completed at least one graduate course each in Statistical Methods, Management Science, Theory of Experiments, and Inventory Control. Must have 1 year experience in the use of the Management Operations Research. Experience must include utilizing the computer in the solution of the above panel of local authority to the above panel of local authority. Send TWO COPIES of resume to: **State Department of Employment Security, 400 North Dearborn Street, 4th Floor, Chicago, IL 60610.** After 4 business days, call: **1-800-368-1444** or **CALLER ID EMPLOYER FMS AD.**

CONSULTANTS
Multiple locations.
Contract & Permanent.

- TTV Applications
- TTV Systems
- TANDEM C & TAL
- SAP
- PRO-IV

Contact: Charles Martin at
MICHAEL/MERRILL
4800 West 95th St. Ste. 202
Shawnee Mission, KS 66207
TEL 913-263-2621
TEL 913-263-8497

**APPLICATION
ALL STARS**

★IBM ★SPC ★JDE
★PERSONAL ★MARCM
★HP ★WILLIAMS ★SYSTEM
★AT&T ★JUN 89
AND AROUND THE WORLD

IBM
400 South Street, Suite 200
Newark, NJ, U.S.A.

OS/2-AND THE 32-BIT

TABLE 1
CODE: PHTWHL
SC00LC 90L33
WORLDWIDE
FLIGHTS/CHARTERS
FLIGHTS
DOM. INTL. SEAS. RTW.
800-552-JOHN 14-80L
Full-time/Contracting Positions
available in the USA/ABROAD
TABLE 1
800-552-JOHN
TEL (212) 647-3919
FAX (212) 647-4386
134 W. 30th St. Suite 4208
New York, NY 10001

Alone is an Equal Opportunity/Affirmative Action Employer. If you have the background and interest, please send resume to:

AMES Personnel Mgr.
Aluminum Company of America
1501 ALCOA Building
Pittsburgh, Pa. 15219
FAX: 412-353-2484



"...Computerworld Direct Response Cards deliver results directly to our bottom line."

- Joe Allegra
President
Princeton SOFTECH, Inc.

At Princeton SOFTECH, revenues have more than doubled in the past year and business is booming. In addition to its headquarters in Princeton, New Jersey, the company boasts a network of nine international distributors and just recently opened a European office in Amsterdam. With its sales force firmly in place, President Joe Allegra faces the challenge of finding the best prospects for a unique mainframe software product, Version Merger.

"In a nutshell, Version Merger accelerates the reconciliation of multiple versions of application systems. Since companies typically purchase off-the-shelf software and then make modifications to fit their own internal requirements, they must also make the necessary upgrades every time a new version is released. With Version Merger, much of that task is accomplished automatically. By identifying and reconciling conflicts between internal customized software and vendor changes in new releases, Version Merger automates all aspects of the upgrading process.

"For users of IBM's MVS operating system, this means reduced programming time, quicker introduction of the new functionality, and increased application quality. By simply implementing Version Merger, our clients tell us that they experience a 50% reduction in the time required to introduce an upgrade. At Princeton SOFTECH, then, our goal is to get this message out to large mainframe-using organizations in the financial, insurance, pharmaceutical, and manufacturing sectors, as well as to application software companies.

"To reach project managers within sites responsible for maintaining and upgrading application systems, card deck advertising

has really paid off. Computerworld's Direct Response Cards, in particular, have helped us achieve widespread success in finding individuals actually plagued by upgrade problems. With its longstanding reputation as the industry's news leader, Computerworld delivers a large paid circulation that definitely works to our benefit.

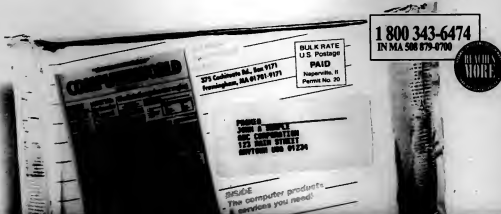
"And the proof is in the pudding, so to speak. With each Computerworld Direct Response Card we run, we receive lots of responses. At least 40 of these responses were very solid leads. More importantly, with our revenue tracking system, we can trace substantial dollars in product sales right back to these leads. The numbers are conclusive: Computerworld Direct Response Cards deliver results directly to our bottom line.

"Deck after deck, Computerworld Direct Response Card advertising has been effective in helping us target our best prospects for Version Merger and in increasing market awareness for Princeton SOFTECH. Not only do we plan to increase our 1992 frequency schedule, but we also are looking to advertise two new products in Computerworld Direct Response Cards upon their release mid-year."

Every month, Computerworld Direct Response Cards give you a cost-effective way to reach Computerworld's powerful buying audience of over 135,000 computer professionals. They're delivering bottom-line results for Princeton SOFTECH - and they can work for you. Call Norma Tamburino, National Account Manager, Computerworld Direct Response Cards, at 201/587-0090 to reserve your space today.

COMPUTERWORLD DIRECT RESPONSE CARDS

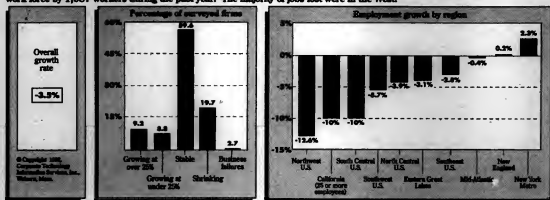
Where you get direct access to quality sales leads.



COMPUTER CAREERS

Computerworld/Corptech Career Index

MANUFACTURING EQUIPMENT — The 294 manufacturing firms surveyed by Corptech reduced their work forces by 1,087 workers during the past year. The majority of jobs lost were in the West.



Systems Analysts/Circuits: Plan, schedule & manage projects to develop commercial business solutions for wide variety of businesses & clients by use of electronic data processing equipment incl. IBM Main Frame, DEC, & utilizing relational data base software; the IBM, INFORMIX, ACB, ORACLE, & INFORMATION & others; MS, & the CDB, etc.

[illegible][illegible]

of all other letters and/or resumes to: Chief, Department of Security, Federal Bureau of Investigation, 300 South Dearborn Street, Chicago, Illinois 60604. Please include the following in your letter: (1) Name, address, phone number, and date of birth; (2) Social Security Number; (3) Education; (4) Employment history; (5) References; (6) Other pertinent information. NO CALLS. An employer need not respond.

[illegible]

SOFTWARE PROJECTS MANAGER - 40 hrs/wk, long-term, \$80,000-\$90,000 per yr. to oversee and direct U.S. and offshore project planning, methodology development, implementation, testing, support, maintenance, quality assurance and integration. Pressure propagation and process control. Computer languages and management systems. Employee training. Requires a Master's Degree in Computer Electronics Engineering or equivalent. Management or Business Administration. 7 years experience in job offered or 7 years experience in related field. Salary commensurate with education and experience must include offshore project management, quality assurance and system migration on IBM mainframe computer architecture, networking and imaging software, project methodology tools i.e., PLANSYS, ISSAO, JIVE or JAW, U.S. & MGR. KOL QUAYTEL, WESTPORT, MNTE, LARK, OCEC, BEE, SLOVIC, DCE INSPIRES INC., 6000 W. 10TH AVE., SUITE 100, DENVER, CO 80202-4418. Quoted, Michigan 40202

[illegible][illegible][illegible][illegible]

**T
S
f
h**

**Call Lisa N
MA, 508-8
with Comp**

Week

An ID

**This
space
or
fire.**

PUREWORLD
Chlorination System
Water Treatment

And it works.

Communications P

6474 (in
uit the best

ational.

This space for hire.

Call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700). And recruit the best with *Computerworld*.

Weekly. Regional. National.
And it works.

An IDG Communications Publication

RYVIS
PROFESSIONAL SERVICES
Contracts Nationwide

CURRENT OPPORTUNITIES
Software Engineers
- CICS, DB2
- SYNON, RPE 400
- IMS, IS-DC, CDSOL
- Adm. WOL/COROL

Just a few of our
available positions!
Confident, motivated,
and highly qualified
Professionals need or
for (1-702-549-4224)
resumes to:

RYVIS
PROFESSIONAL SERVICES
1050 E. Flamingo Rd
Suite 142
Las Vegas, NV 89119

I S Pros
1000 S. Main St.
Suite 100
Las Vegas, NV 89101
(702) 595-1234

CCS has a number of
openings for
Software Engineers
- CICS, DB2
- SYNON, RPE 400
- IMS, IS-DC, CDSOL
- Adm. WOL/COROL

Just a few of our
available positions!
Confident, motivated,
and highly qualified
Professionals need or
for (1-702-549-4224)
resumes to:

RYVIS
PROFESSIONAL SERVICES
1050 E. Flamingo Rd
Suite 142
Las Vegas, NV 89119

This
Space
for
HIRE!
CALL:

800-343-6474

in MA.
508-879-0700,
ask for
John Corrigan,
Vice President
Classified
Advertising.

Weekly.
Regional.
National.

And it Works!

C NCP
CON
WANG
DB2 CICS
SUL
ORACLE
ELLAPL
T INGRES
DMS II
VMS TEST
A
LAN OS/2
SYBASE
CLIPPER
TERADATA
S
AI/UNIX

COMSYS
Atlanta, Colorado Springs,
Dallas, New York, Orlando,
San Francisco, Washington, DC

Dep. Ch
1000 S. Main St.
Suite 100
Las Vegas, NV 89101
(702) 595-1234

NACCS Member

NY/NJ/PA/CT/IL
DC/CA/KC/TX
CONSULTING
OPPORTUNITIES
Involving IT and Operating
Systems Available

- TANDEM
- ADABAS
- IMS DB/DC DB2

LANCASTER SYSTEMS
1000 S. Main St.
Suite 100
Las Vegas, NV 89101
(702) 595-1234

HOGAN
PROGRAMMERS
ATLANTA

13 long-term contract posi-
tions requiring 100% ex-
perience. Excellent pay and
benefits. Immediate start.
Interested persons should
send resume to:
HOGAN PROGRAMMERS
1000 S. Main St.
Suite 100
Las Vegas, NV 89101
(702) 595-1234

BECKY FINLEY
(404) 478-5681

COG

Software Engineer - 40 hrs/week
and 100% experience. Excellent pay
and benefits. Immediate start.
Interested persons should
send resume to:
COG
1000 S. Main St.
Suite 100
Las Vegas, NV 89101
(702) 595-1234

DATABASE ANALYST

Entergy Services, Inc., the technical service subsidiary of Entergy Corporation, has an opening for a Database Analyst in its New Orleans location.

The position will work with quality assurance and applications development personnel to support three production IMS DB/DC/Pathway and one production CICS/DB2 environments. The candidate will be responsible for control block generation, database performance monitoring and tuning, database design, database integrity verification and recovery for IMS Full Function and Pathway, and DB2 Tables. Additionally, the candidate will participate in the rollout of a production distributed Sybase environment.

The current environment consists of two IBM 3090/400's supporting production applications in IMS DB/DC and CICS/DB2. Future applications will also be developed in an MVS/ESA/UNIX/Sybase distributed architecture. A minimum of 2 years experience in Database Administration is required, preferably with experience in an IMS DB/DC environment. A Bachelor's degree or equivalent experience is needed.

We offer an excellent compensation and benefits package. For consideration please send resume and salary requirements to: Entergy Services, Inc., Human Resources Department, SAS, P.O. Box 61000, New Orleans, LA 70161. An Equal Opportunity Employer M/F/D/V.



OPPORTUNITIES WITH THE FLORIDA SPECIALISTS

IBM APPLICATIONS PROGRAMMERS
CICS / DB2 IMS DB / DC
JNMS / ADSO
AS400 RPG 400

TANDEM APPLICATION AND COMMUNICATIONS
COBOL / PATHWAY C / SQL
TAQL / TAL

CLIENT SERVER TECHNOLOGY
C / UNIX X-WIN / GUI

WE SET THE STANDARD OF EXCELLENCE in the State of Florida. Offering both Permanent Placement and Consulting opportunities.

Please mail or fax your resume for consideration to:
COMPUTERPEOPLE, Department 682

1000 S. Main St. Suite 100
Las Vegas, NV 89101
(702) 595-1234

COMPUTERPEOPLE

CONSULTANTS SHOULD CONSULT

CONSULTANTS CONTRACTORS
CICS/DB2, IMS DB/DC, JNMS/ADSO, AS400, RPG 400, COBOL, PATHWAY, C, SQL, TAQL, TAL, X-WIN, GUI, X-WIN, GUI, X-WIN, GUI

WE'RE ON A ROLL.

Due to unprecedented growth as the trendsetter in the industry standard of client/server architecture, Sybase and SQL Solutions, its consulting division, are actively seeking to hire consultants who possess that rare combination of initiative, self-direction and talent in the RDBMS-based environment.

CONSULTANTS AND SENIOR CONSULTANTS
Sybase SQL Solutions' professional consultants span the entire life cycle of RDBMS-based systems development. We design, develop, and deploy large client server applications for Fortune 1000 companies and assist them in establishing information and technology infrastructure. Requirements:

- A minimum of five years related experience.
 - Knowledge of software development life-cycles.
 - Proven software design and development skills.
 - Experience with RDBMS design, management and implementation (Sybase preferred).
 - Adept with 'C' Unix or VMS, SQL.
- (Positions available in New York, Boston, Northern New Jersey, Chicago, Atlanta, Washington, DC and San Francisco. Most positions require U.S. citizenship.)

SYSTEMS CONSULTANTS

Sybase systems consultants act as partners to the business team in technically qualifying and closing sales opportunities by delivering pre-sales technical support to sales representatives and management.

- Requirements:
- Five years experience in the field.
- Proven performance in technical sales support.
- Experience with customer presentations.
- Experience as a "C" programmer.
- Outstanding trouble-shooting skills.
- Excellent written and verbal communication skills.

(The above mentioned positions are available in New York, Boston, Northern New Jersey, Chicago, Detroit, Washington, DC, Cincinnati, and Atlanta.)

We offer excellent compensation packages and competitive benefits. For immediate consideration please mail or fax your resume to:
Cindy Roemer, 6550 Black Spring Dr., Bethesda, MD 20817, FAX (301) 493-5384.
No agency calls please. EOE/AA.



CPI - TECHNICAL OPPORTUNITIES

Due to the continued growth in our product demand and client base, we have several immediate career opportunities for individuals with exemplary technical systems knowledge for the following areas:
APPLICATIONS/MICRO PROGRAMMERS
A minimum of 2-3 years experience in any of the following: on-line or batch COBOL, processing, CICS, COBOL, under DB2, or 'C' along with at least one college degree is required. Knowledge of CPT's MSP is a plus.

SYSTEMS PROGRAMMERS
A minimum of 3-4 years systems programming experience in a large MVS/ESA environment in any one of the following areas:
• Performance Analysis/Capacity Planning
• Telecommunications Software
• Software Installation/Customization

SYSTEMS ANALYSTS
Extensive hands-on experience in developing either manual or automated systems and procedures for the purpose of transferring mortgage servicing automation needs into systems specifications and driving development projects to completion.

If your experience matches this criteria and you have a personal commitment to excellence, along with a desire to relocate to Jacksonville, Florida, we want to hear from you. We offer excellent compensation, benefits and relocation packages. For consideration, please send your resume and salary history to:

CPI
COMPUTER POWER, INC.
381 Riverside Avenue
Jacksonville, FL 32204



"...Because Computerworld delivers quality responses targeted to the exact experience we need, virtually every one is a potential candidate."

*- Pamela Cianci
Manager of Recruiting
TelTech Corporation*

Specializing in leading-edge hardware and software technologies, TelTech Corporation is an international consulting firm headquartered in New York City. Its major focus is systems development for mainframes, midrange systems, PCs/micros, and robotics, as well as software development and feasibility studies. With over 18 years of consulting experience and 250 employees, the firm primarily staffs and manages large team projects in the financial, insurance, manufacturing, and software development environments. Since each TelTech team is typically 85% employee based and 15% contractual based, Pamela Cianci, Manager of Recruiting, advertises in *Computerworld* to find qualified professionals for both arenas.

"At TelTech we take a total solutions approach, managing all phases of a project from requirements, specifications, analysis, and design through coding, testing, implementation, and maintenance. Essentially, that means we must custom fit the skill sets of all project team-members to meet the exact requirements of over 1000 client companies worldwide. Over time, I can safely say that we look to recruit highly motivated professionals with virtually every technical and programming skill. While finding experienced data processing professionals has always been key, our rapid growth underscored an immediate need for a recruitment advertising program. We wanted a medium that would allow us to recruit the right candidates regardless of location. That one medium is *Computerworld*."

"In just a matter of months, TelTech experienced 40% growth and began rapid expansion outside New York. Clearly, we needed to find lots of qualified professionals in lots of different areas. By generating high-quality

responses from all over the country, *Computerworld's* excellent drawing power has helped expand our business into 22 states. We now maintain fully staffed branch offices in Orlando, Florida; Roswell, Georgia; Upstate New York's Hudson Valley Region; and, most recently, Denver, Colorado.

"Each of our *Computerworld* recruitment advertisements consistently produces 40 or more resumes. And, because *Computerworld* delivers quality responses targeted to the exact experience we need, virtually every one is a potential candidate. Once when we advertised for specific expertise on a brand new piece of equipment yet to be released, we even found - and hired - two candidates with that specialized skill. Our *Computerworld* recruitment advertising is also invaluable in helping establish a bank of qualified candidates for future job placements, as we generally receive resumes far months after each advertisement runs.

In anticipation of at least 100 new hires this year, we're doubling our advertising frequency in *Computerworld* to keep pace with our ever-expanding business thrust. For TelTech, *Computerworld's* far-reaching audience, dedicated readership, and long shelf life spell recruitment success."

Computerworld. It's where serious employers - like Pamela Cianci - reach qualified candidates with key computer skills. Every week. Whether you use computers, make computers, or sell products and services for computers, *Computerworld* can help you recruit the experienced professionals your business demands. For all the facts, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 in MA, 508/879-0700.

COMPUTERWORLD

COMPUTER CAREERS

The hotel welcome mat is out

Registration and check-in are the first steps in a hotel's operation.

T

W

5 BOX SETS TO TRY!

Programmer's Toolkit

TelTech

COMPUTERWORLD

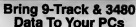
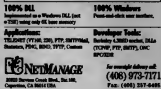
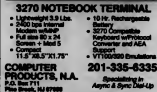
Where the qualified candidates look. Every week.

COMPUTER CAREERS LAST

1 800 343-6474
IN MA 508 879-0700

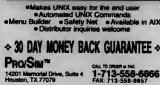
**RENT
READ**

Q&A



Our compact, light and powerful subroutines make it easy to interchange your data on 1/2 inch tape between your PCs, minis and mainframes. Choose from all popular databases and operating systems. Products are backed by long warranties and our comprehensive service and support program. Call for information and a free catalog.

OVERLAND DATA. 800-858-8559



Your Message can appear here and will reach Computerworld's 629,204 readers. Place your message today.

MHC Company
1515 15th Street
Boulder, CO 80501

1-800-333-3333

For just \$2,700, your product can appear 3 times in **COMPUTERWORLD's** **PRODUCT SHOWCASE**. To place your message, or for more information, just fill out this form and fax it to (508) 820-7739. Or place your advertisement by calling (800) 343-6474 (in MA, (508) 879-0700).

☐ I'd like more information ☐ I'd like my product to appear in the Product Showcase

Keywords: *Emotion, social support, coping, stress, health, well-being*

Headline (approximately 1-6 words): _____

Text (approximately 3 medium length sentences): _____

Name of Computer _____ COMMUTER

Name of Company: _____ **COMPUTERS**Address: _____ **PRODUCT SHOW**

City, State, Zip _____ (508) 243-6

800-368-7777

Phone: _____ (IN MA, (617) 879-

COMPUTERWORLD

JOHN STEINBOCK
PHILOSOPHY PROFESSOR

Product Overview

(800) 343-6474

In MA, (800) 879-0700

MARKETPLACE

Top LAN connection questions

What you always wanted to know about networking but were afraid to ask

When it comes to networking, there is no end to the questions you could ask. Just to clear away some of the more common ones, we asked consultant Jill Huntington-Lee to lay some answers on the table.

Q Are smart hubs really necessary?

A An intelligent wiring hub, or concentrator, allows you to segment the network into manageable chunks — making it easier to isolate problems, determine security and keep track of configuration changes.

Also, when workgroups are moved or reorganized, a local-area network administrator can make all necessary changes at one location — the wiring closet — once the hubs are in place. However, smart hubs may not be worth the investment if you're installing a small network with a homogeneous topology.

It will cost between \$40 and \$200 more per port to set up a hub-based LAN; however, the long-term savings in LAN administration and troubleshooting may outweigh the costs in less than two years.

Q What should I look for in a network management system?

A Don't lock yourself into a proprietary solution. Look for compatibility with Simple Network Management Protocol (SNMP) so you can manage other vendors' equipment. Most commercially available SNMP software packages will connect

if you're integrating the management of a global network of LANs and wide-area networks, investigate the new "enterprise management" solutions, which cost from \$150,000 to several million dollars.

Q What type of wiring is best for installing a LAN in a single building?

A Guidelines for structured cabling usually recommend shielded twisted pair (STP) or data-grade unshielded twisted pair (UTP) for host-to-desktop connectivity. In the backbone riser system connecting building floors, the guidelines recommend either ThinWire, fiber or coaxial cable.

Connecting workstations, printers and the like with coaxial cable is generally avoided today — twisted-pair is easier to install and costs less per foot. Used with a structured wiring (hub-based) configuration, twisted-pair accommodates orderly growth and is more manageable.

Q What type of cabling is best for connecting buildings on a campus-size LAN?

A The preferred choice is running single-mode or multimode fiber trunks between buildings. Since the costs for pulling and terminating cabling are greater than the cable itself, a

rule of thumb is to install enough cable to support three or four times the bandwidth needed. If you can afford it, pull both single and multimode fiber at the same time.

Q Will I always save money by using existing UTP instead of STP?

A That depends on your environment. Existing voice-grade UTP (ordinary telephone wire) is definitely unsuitable in "noisy" environments where electrical interference from manufacturing operations, fluorescent lights, elevators and even office equipment may garble data transmissions.

Even if noise is not a problem, your existing wiring scheme may not be well-documented, and you'll end up paying the cable installer extra money for the time it takes to match wire pairs.

Data grade UTP is less susceptible to noise, but STP is superior to both. According to UTP fans, however, STP is more expensive, harder to work with and not worth the trouble.

But keep in mind while there are benefits to both of these approaches, mixing the two is not a solution because they are not compatible.

Q When should I use a router or instead of a bridge to connect LANs?

A Generally speaking, the larger and more complex the network, the more likely it is you need a router. Bridges are sometimes faster, but routers handle complex tasks such as load balancing, diverse routing and isolating different traffic types to appropriate LAN segments.

Bridges connect LAN segments by forwarding all packets not addressed to the local LAN. Each new LAN segment means more extraneous traffic, as packets travel around trying to find their final destination. This chews up a lot of bandwidth on long-distance links to remote LANs.

In contrast, routers recognize various protocols and can filter traffic based on protocol type, application and other criteria. Routers can create "firewalls" between networks to isolate "broadcast storms" that can crash a network.

They can also support redundant links for disaster recovery purposes. The downside is that routers are more complex to configure and install and are susceptible to crashing when reconfiguring occurs.

Huntington-Lee is principal at Bradwin/Network Associates in Glenview, Ill., and a member of IEEE and the Association for Computing Machinery. Her McMilan address is 446-3800.



You can pick up some useful tips on networking from Internet mailing lists. To subscribe, send a request to one of the following electronic-mail lists:

- *big-lan-request @uvm.acs.eyi.edu
- *info-appletalk @andrew.cmu.edu
- *sls@trac.edu

several thousand dollars and run as high as \$50,000 for Unix-based packages supporting artificial intelligence.

Don't be lured by fancy graphics. They require more expensive platforms and can be tiresome to view. The user interface should be easy to master, however. Look for red flashing lights that get your attention rather than a pure command-line interface with nontop messages.

Buy/Sell/Lease

DEMPSEY. WHERE IBM QUALITY IS SECOND NATURE.

- SERIES/1 BUY-LEASE-SELL
- 9370 • Processors
- RS/6000 • Peripherals
- INDUSTRIAL PC • Upgrades
- ES/9000
- AS/400
- SYSTEM 36/38
- POINT OF SALE

(800) 888-2000.

Dempsey BUSINESS SYSTEMS

18371 Market Blvd. Suite 302 • Huntington Beach, CA 92648 • (714) 841-4444 • FAX (714) 841-3093

IBM

Authorized Dealer/Reseller Integrator

RS/6000
SERIES/1
SYSTEM
36/38

CDL

DATA CENTER

RT
4300
9370
AS/400

It's the Classified Marketplace

Reach Computer Professionals Where They Shop For:

- Buy/Sell/Lease
- Conversions
- CPC Rentals
- Hardware
- Software
- Peripherals/Supplies
- Communications
- TeleServices
- Business Opportunities
- Used Equipment
- Leasing
- Graphics/Desktop Publishing
- Data/Proprietary/Peer Exchanges

(800) 343-6474
In N.J., (201) 975-0700

DATA CENTER

- 2,000 S.F. Access Floor
- Libbert 10-Ton A/C CO
- Libbert 10-Ton A/C CO
- Nelson 10-Ton System

CALL FOR DETAILS

300 S. Military Trail
Deerfield Beach, FL 33442

Data General

- Large inventory of new & used DG equipment available
- Complete systems & spare parts for times & VSP systems
- Also new Plug-Compable Data, Tape & Printers
- World-wide Service

Buy-Sell-Lease-Point International Computing Systems

800-823-4000
Fax: 312-490-2800

Why own a data center for your information systems?

Your company's business is your focus.
Outsource your company's information to Martin Marietta, a Fortune 100 corporation, and you're in control of the resources you need when you need them. We're here providing outstanding services to the Federal government and corporate clients for more than 20 years. Our multiple data centers are accessible nationwide, and staffed with expert personnel ready to serve your needs.

FOCUS...
A Large Regional Association—depends on us to provide over half of its members with access to demographic, statistical and technical consultation for the design, integration, and implementation of the member network.

FLEXIBILITY...
A Major Electrical Supplier—saves by eliminating its data center. With Martin Marietta, that company has the computer resources it needs now and can increase or decrease solutions with minimal cost impact.

**Martin Marietta
...A Welcome Alternative**

RESPONSIVENESS...
A Federal Government Agency—uses Martin Marietta to provide a secure, nationwide teleprocessing service. The U.S. agricultural industry relies on us for its business forecasting.

RESOURCES...
A Major Distributor—relies on Martin Marietta for all maintenance, programming, support and production control.

AND NOW YOU...
Should talk with a Martin Marietta representative and find out how we can help you concentrate on your business.

OFFICES
Chattanooga, VA (703) 802-5300
Philadelphia, PA (215) 963-0225
Orlando, FL (407) 836-1120

or call 1-800-873-7867

MARTIN MARIETTA

INFORMATION SERVICES
4795 Meadow Wood Lane
Chattanooga, VA 22021

**COMPUTERWORLD
Classified Marketplace**

**needs only 2
days notice to run
your ad!**

When you're selling, you want your advertising to be the most quickly and frequently. You can't afford to wait for an issue that's coming out several weeks - or months - into the future. With Computerworld, there's no waiting for the next available issue because we've got one for you every week. What's more, your ad can appear in the Monday issue of Computerworld if you order just 2 days prior to the issue. Advertisers in the newspaper that won't have your listing, but will be in Computerworld Classified Marketplace.

For more information, call:
800/343-6474
(In MA, 508/879-0700)

**USE OUR TECHNOLOGY
TO YOUR FINANCIAL
ADVANTAGE**

Hundreds of Large and Small Companies Gain a Competitive Advantage by Using Comdisco's Nationwide Remote Computing, Information Technology Sourcing and Global Data, Voice and Video Network.

Featuring:

- IBM® CPUs and Peripherals
- Full Range of Systems Software
- Database and Applications Software Support
- Technical & Financial Planning
- Disaster Recovery
- Service Level Guarantees
- Capacity & Platform Transition Planning
- Financial Asset Management

Call: Bob Marlow

800-227-6584

COMDISCO®

COMDISCO COMPUTING
SERVICES CORP.
450 Guilford Parkway
Larchmont, NY 10538
(201) 996-3611

**OUTSOURCING, REMOTE COMPUTING,
NETWORK MANAGEMENT SERVICES**

- IBM MVS/3A Environment
- DB2, IMS/VS, Model 204, CICS and 4 GLS
- Professional Support Staff
- Experienced Migration Management Team
- Flexible Charges, Custom Solutions To Meet Your Needs
- AS/400, Asset
- Support Services
- Media Conversion
- Laser, LED & Impact Printing
- Application Programming
- Network Management Services LAN/WAN/MAA/SNA/PIIX
- Technical Support
- 24 Hours Per Day - 7 Days Per Week

May & Speltz, Inc.

1501 Opus Place - Oreming Grove II, 50515-5713

1-800-723-1501

For More Information Contact: Tony Rantieri

FINALLY!

There is a **BUYER'S Broker.**

COMPUTER RESERVES will

- Nationally search for all manufacturers
- Match your exact specifications
- Locate multiple OUTSOURCING sites
- Negotiate the lowest price for you

With 200+ placements in 24 years, CRI has achieved solutions at NO COST to your CALL DON SEIDEN

1 800 882-0968 NJ 201 882-9700

REMOTE COMPUTING • OUTSOURCING

ALICOMP, INC.

The "Boutique" of the Computing Services World

VAX, MVS, VSE
Outsourcing
Time-sharing
Consulting
Remote and On Site
Serving Clients Since 1980
(212) 886-3600

an affiliate of
Management Life

**CLASSIFIED
MARKETPLACE**

Examines the issues while computer professionals examine your message.

Call for all the details.
(800) 343-6474
(In MA, 508/879-0700)

**CLASSIFIED
MARKETPLACE**

Where
America's
Computer
Professionals
Shop

(800) 343-6474
(In MA, 508/879-0700)

Offshore Outsourcing

Many companies are using low cost offshore programming. We have the qualified people (over 200) and hardware for your projects. Why pay more when you can do it for less? We have the references to prove it.

- DOS to MVS conversions
- DB2 to IMS conversions
- DBMS conversions
- IF translator conversions
- Mainframe development
- Consulting & Other Services

DBMS Software Services
3000 Unimatrix
Delaware 19739
Phone/Fax
(713) 524-6115

The BoCoEx index on used computers
Closing prices report for the week ending May 15, 1992

	Closing price	Ask	Bid
IBM AT 330	\$500	\$700	\$250
PS/2 Model 30 286	\$500	\$900	\$300
PS/2 Model 35SX	\$1,525	\$1,600	\$800
PS/2 Model 55SX	\$1,200	\$1,300	\$800
PS/2 Model 60	\$600	\$900	\$325
PS/2 Model 70	\$2,650	\$2,800	\$1,200
PS/2 Model 80	\$1,900	\$2,100	\$1,100
PS/2 Model 95	\$4,200	\$4,600	\$3,300
Compaq Portable II	\$435	\$500	\$375
Portable III	\$550	\$650	\$250
Portable 386	\$1,700	\$2,125	\$1,000
SLT-386	\$700	\$900	\$400
LTE-386	\$900	\$1,100	\$500
Deskpro 286	\$600	\$1,000	\$325
Deskpro 386/33	\$1,800	\$2,000	\$1,100
Apple Macintosh Classic	\$875	\$1,050	\$700
SE	\$775	\$875	\$600
HX	\$2,900	\$3,250	\$2,000
HCi	\$3,200	\$3,600	\$2,400
HPX	\$4,200	\$4,900	\$3,700

INFORMATION PROVIDED BY THE BOSTON COMPUTER EXCHANGE CORP.

COMPUTER INDUSTRY

IN BRIEF

Lotus suit set for fall

■ U.S. District Court Judge Robert Keeton has set a Nov. 2 trial date for Lotus Development Corp.'s copyright infringement suit against Borland International, Inc. New motions for summary judgment were filed under advisement. Similar motions were denied in March.

■ U.S. technology firms reaped a record \$400 million harvest of Japanese investment in 1991, according to a survey by market research firm Technologic Partners. That figure is up 60% from the 1990 total and up 33% from the previous all-time high of \$300 million.

■ IBM's low-end Application System/400s are now available via a toll-free number for Business Partners. The IBM On-Line program includes 90 days of free service with each new E02 or E04 model purchased and expands the number of resellers allowed to sell the boxes.

Short takes

■ Cullinet Software, Inc. founder John J. Cullinan has resigned his directorship at Wang Laboratories, Inc., citing demands from other commitments. . . . NBI, Inc. President and Chief Executive Officer Stephen G. Jerrits will resign, effective June 19. NBI board member Ronald P. Erickson will fill in as chairman and interim CEO. . . . Northern Telecom Ltd. has joined the Semiconductor Research Corp. research consortium. . . . Dayna Communications Corp. (SMC) announced early retirement of its \$5 million Senior Subordinated Note payable to Western Digital Corp., which canceled an attached warrant to purchase 500,000 shares of SMC common stock.

Everex rescues Northgate in buyout

Deal calls for stock swap between two clone makers; Northgate to still produce PCs under own name

BY CAROL HILDEBRAND
CW STAFF

Help came from unlikely quarters.

After last week for troubled mail-order firm Northgate Computer Systems, Inc., which agreed to a merger with a stock swap with Everex Systems, Inc., a firm that has had some problems of its own.

Under the agreement reached last week, Everex will tender 750,000 shares, or about 3% of its common stock, in exchange for all the outstanding Northgate capital stock. Northgate will operate as an independent subsidiary and continue to produce personal computers under its own name for the mail-order channel only.

Northgate had previously acknowledged bankruptcy talks with a number of different companies, but IBM was generally said to be the favored suitor. James Cannavino, general manager at IBM's Personal Systems Division, had termed such speculation as "way ahead of [its] time."

Cannavino acknowledged that IBM had talked to a number of direct-mail vendors — but only as a way of studying the low-

time for Eden Prairie, Minn.-based Northgate, which fell into financial difficulties after an ill-fated attempt in 1989 to add direct sales onto its mail-order base. The clone maker also suffered some hits in the vicious price war now raging across all sectors of the PC industry, analysts said. Northgate President Gary Field agreed that the buyout would help his firm out of a cash-flow jam.

The deal "allows us to get into a very lucrative market fast," said Hal Clark, president of Fremont, Calif.-based Everex. "We can't get into it without such an acquisition — it would be fair to our dealers."

Kimball Brown, an analyst at International Data Corp. in Mountain View, Calif., agreed: "They bought all this very cheaply. It doesn't really cost them anything, just dilutes the earnings a little."

Everex "clearly wanted to pursue this channel and saw this as the best way to do it with a minimal impact" on its traditional network of dealers, he added.

Everex value-added resellers will continue to use Everex-only machines, Clark said, and there will be no mixing of the various distribution channels. What will be mixed is both firms' engineering and manufacturing, with Everex picking up the manufacturing of some of Northgate's line. Most of the engineering for all future Northgate products will also be done at Everex, Clark said. Clark did point to a few impositions, however, including the installation of a real-time order-entry and processing system.

Profit increase

Everex is bouncing back from some financial troubles of its own, analysts said. However, the firm reported its third profitable quarter in a row last week, announcing record revenue of \$140 million, or a 27.9% increase over the comparable period a year ago.

Another area of concern was the PC maker's pinched credit situation, which also got a boost last week. Everex announced that its credit line has been increased to \$72.5 million to \$72.5 million.

Analysts also pointed to the firm's increased presence in Europe and a wave of expansion into the mass merchandising and superstore channels as positive factors.

Bought out

After three consecutive quarters in the red, Northgate finds itself purchased by Everex, which managed three consecutive profitable quarters

	Post five calendar quarters	Revenue*
Everex		
Q1 '91	\$109.3	\$(1.5)
	\$116.7	\$(31.3)
	\$121.3	\$0.4
	\$133.1	\$1.3
Q1 '90	\$146.0	\$2.4
Northgate		
Q1 '91	\$46.9	\$2.2
	\$44.2	\$1.9
	\$37.0	\$(0.44)
	\$39.0	\$(1.0)
Q1 '90	\$34.3	\$(1.3)

*in millions

CW Source: Michael Signes

end market. He said the company had reached the conclusion that IBM could produce PCs cheaper than any competitor.

The buyout comes at a good

HP quarter ends with 40% jump in earnings

BY MARK HALPER
CW STAFF

Hewlett-Packard Co. continued to buck industry financial trends last week, reporting a 40% increase in net earnings for the quarter ended April 30 to \$326 million, or \$1.28 per share. That compares with net earnings of \$233 million, or 93 cents per share, in the same quarter a year earlier.

Sales for the period rose 12% to \$4.18 billion from \$3.73 billion. Earnings from operations before taxes totaled \$486 million, up 32% from \$367 million. HP registered \$7 million in income from royalties, technical fees and other nonoperations.

In a prepared statement, HP Chief Executive Officer John Young attributed much of the company's \$450 million in revenue

growth to two product areas: peripherals and Unix-based minicomputers.

Robert Herwick, an analyst at Hambrecht & Quist, Inc. in San Francisco, estimated that peripherals and Unix minicomputers

each grew by \$160 million to \$180 million. HP's reduced instruction set computing-based Unix workstations also saw a modest increase in sales.

Although sales of HP's proprietary minicomputers declined, they managed to outsell their Unix siblings, clocking in at just over \$2 billion compared with just over \$2 billion on an annualized basis, Herwick said.

Analysts, however, said they expect the Unix boxes to over-

take the proprietary models in revenue by year's end or soon thereafter.

Personal computer sales also took a hit, although Young said the business was profitable. Despite the surge in earnings, HP's stock dropped three points, from 77 1/2 to 74 1/2 last Monday, the day the company disclosed its results. Analysts attributed the decline to nervousness over a slump in the company's international performance.

CA boasts income, revenue growth in 1992

ISLANDIA, N.Y. — Computer Associates International, Inc. last week reported strong growth in revenue and income for its fourth quarter and fiscal year ended March 31.

For the quarter, revenue grew 31% to \$469.86 million, compared with \$359.83 million in revenue for the same period last year. Net income for the quarter was \$57.74 million, a 48% leap over fourth-quarter

1991 net income of \$39.09 million.

For the fiscal year, CA reported \$1.51 billion, a 16% increase over \$1.30 billion reported last year. Net income rose 25% for the year to \$162.90 million, compared with \$130.25 million in net income last year.

Charles B. Wang, chairman and chief executive officer of CA, was decidedly upbeat about the firm's results. "We are extremely

pleased with the record results of the March quarter and the entire fiscal year as a whole — particularly in light of the continuing worldwide economic malaise," he said in a released statement.

Wang said the company has experienced strong growth in the sales of its microcomputer and midrange software products. CA does not break out sales figures.

To frame relay users tired of being stuck in traffic, offers the express lane.

We know. They told you frame relay could zap huge amounts of data from LAN to LAN with lightning speed. But eventually, you found out they could only send your data in dribs and drabs.

Well, take heart. Sprint's Frame Relay service is unlike the others. Because ours doesn't limit the flow of data into the network. Instead, it gives you the capability to send longer bursts of data. Net result: Less delay and greater throughput. Net net result: You spend less time sending and receiving data, and more time using it.

To us, it seemed like a better way. That's why we designed our Frame Relay network specifically around your needs. Ultimately, though, it's up to you: Bumper-to-bumper data. Or the fast lane. 1-800-736-1130.



Sprint.

Not just another phone company.™

Nightmare Scenario #2

THE RUNAWAY CASH SUCKER.

"Why didn't someone tell me this @!?!& network would cost so much?"

A lot of executives go pale when they see how much their computer networks are really costing them.

"What's with all this new pay-roll?" they ask. "I thought this thing was going to save us money."

Too late. They're strapped to a runaway cash sucker and heading downhill fast.

The fact is, the real economics of running a computer network are never even mentioned by the people trying to sell you one.

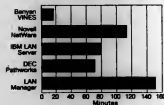
And not knowing can cost you plenty.

Research proves Banyan more cost-effective than Novell, IBM, DEC and Microsoft.

Which brings us to the research report offered free on this page.

It was compiled by the Business Research Group, and shows how

Time Required To Add A Network-Wide Service



Business Research Group/Newton, MA bc16D

For sheer cost-effectiveness, Banyan surpasses everyone.

Banyan,® Novell,® IBM,® DEC,® and Microsoft,® stack up against each other in cost of operation.

What BRG did was to interview the day-to-day LAN managers at 180 different organizations about the length of time required to execute 11 typical network functions.



Send for this impartial survey of network cost-efficiency. It's full of hard, actionable data.

Banyan won in all 11 categories. Often by astounding margins.

Whatever the job, administrators of Banyan VINES® networks were able to do them faster.

And faster translates into smaller staffs and lower cash outlays.

Banyan won across the board because our unique integrated architecture greatly simplifies administration. With Banyan VINES, cost-efficiency is built in from the beginning.

Computer networks are rapidly becoming indispensable to business. So understanding the true cost of networking is now critical.

The BRG report is a good place to start. This is a real-world report based on the testimony of actual network managers.

Banyan is the world leader in simplifying the use and management of networks—and we can show you why.

For your free copy of the BRG report, and/or a VINES 5, 10, and 20 brochure, call 1-800-828-2404.

Please send this coupon to: BANYAN, CW
120 Flanders Road, Westboro, MA 01581
1-800-828-2404.

Check one or both:

- ☐ BRG report
☐ VINES 5, 10, and 20 brochure

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

PHONE _____

